

# FLIGHT

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AND AIRSHIPS

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## EDITORIAL COMMENT



THE Secretary of State may issue such directions as he thinks fit for the purpose of supplementing or giving full effect to the provisions of this Order, including the Schedules thereto." When you come to think of it, this sentence, which is Article 30 of the Air Navigation (Consolidation) Order of 1923, invests whoever happens to be Secretary of State for Air at any particular moment with pretty well unlimited power. "Such directions as he sees fit" is sufficiently comprehensive to cover almost anything. As the Order became law some nine years ago, the aviation community should probably deem itself fortunate that no Secretary of State for Air has "seen fit" to stop all flying at some time during that period. Now, however, the Secretary has "seen fit" to put a ban on all experimental flying, and it has remained for Lord Londonderry, our present Secretary of State for Air, to put the crowning indignity on a long series of hampering restrictions. We do not for one moment believe that Lord Londonderry has been personally involved in drafting the offending clause in A.N.D. 11, but as Secretary of State for Air he cannot escape the responsibility for having affixed his signature to this amazing document.

The Air Navigation Directions, 1932 (A.N.D. 11), is an innocent-looking publication, price 9d., obtainable by anyone from His Majesty's Stationery Office, and outwardly shows no signs of the momentous clauses which, within its plain white covers, are so insidiously foisted upon an unsuspecting aviation community. The rules and regulations which surround anyone who is unfortunate enough to desire to get into the air are so numerous that we sometimes wonder that any ever bother to fly at all. Among the reams of red-tape notices of one kind and another, a small item like that of experimental flying may easily escape attention for a time, but, as in other spheres of endeavour, ignorance of the law is no excuse, and those who may have failed to see the new regulation would be soon shot down by the Air Ministry's "Very Pistol." In effect,

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### DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

- Oct. 20. "Flying Conditions on the West Coast of Africa." Lecture by Flight-Lieut. W. G. Pudney, before R.Ae.S.
- Oct. 21. Maidstone Ae.C. Autumn Dance.
- Oct. 22. Southdown Gliding Club Annual Ball, Grand Hotel, Brighton.
- Oct. 23. Close of Berlin Sporting Flying Exhibition.
- Oct. 27. "Aeroplane Covers and Wheels." Lecture by Mr. F. Fellowes, before R.Ae.S. (Joint Meeting with Inst. of Rubber Industry.)
- Oct. 27. Public Luncheon, The Wayfarers' Travel Agency, Ltd., at Criterion Restaurant. Discussion:—"Travel in the Air."
- Nov. 1. Junior Ae.C. Dinner to Flt. Lt. C. F. Uwins and Prof. A. Piccard.
- Nov. 3. "Civil Primary Training." Lecture by Mr. H. G. Travers, D.S.C., before R.Ae.S.
- Nov. 4. Central Flying School Reunion Dinner, May Fair Hotel, W.
- Nov. 5. No. 208 Sqdn. R.A.F. Reunion Dinner, Carr's Restaurant, Strand, W.C.
- Nov. 10. "Airscrew Design." Lecture by Mr. D. L. Hollis Williams, B.Sc., A.F.R.Ae.S., before R.Ae.S.
- Nov. 12. Reading Aero Club Dance.
- Nov. 18-Dec. 4. Paris Aero Show.
- Nov. 24. "The Evolution of Aircraft Wireless Equipment." Lecture by Sqdn.-Ldr. H. Leedham, O.B.E., R.A.F., before R.Ae.S.
- Nov. 25. Norfolk and Norwich Ae.C. Annual Ball.
- Nov. 26. Comrades of the R.A.F. Reunion Dinner, Harrods'.
- Dec. 1. "The Behaviour of Fluids in Turbulent Motion." Lecture by Mr. A. Fage, A.R.C.Sc., F.R.Ae.S., before R.Ae.S.
- Dec. 2. Hampshire Ae.C. Annual Dinner and Dance.
- Dec. 8. "Air Survey." Lecture by Lieut. J. S. A. Salt, R.E., before R.Ae.S.
- Dec. 14. "Air Power and Disarmament." Lecture by Group Capt. J. T. Babington before R.U.S.I.

the new clause which has been included in A.N.D. 11 states that no one may attempt to get off the ground without having first obtained the consent of the Secretary of State for Air. The idea of a would-be follower of Icarus having to go before the Secretary of State for Air and explain his reasons before being officially permitted to jump off his own domain is really too comic. Yet that is, in effect, what the new clause means.

Let us turn to p. 24 of A.N.D. 11, where we find, under Section VI and Article 60, that with reference to proviso (a) to Article 3 (1) and proviso (b) to Article 4 (1) of the Order (we nearly wrote the "Sacred Order") an aircraft which does not comply with all or any of the conditions there mentioned may, nevertheless, fly, provided that the flight does not contravene any of the other provisions of the Order, or that its flight is carried out by special permission of the Secretary of State for Air, or, finally, that the flight satisfies "A conditions" or "B conditions," which are then duly set forth in Section VI of A.N.D. 11. Upon looking up proviso (a) to Article 3 (1) and proviso (b) to Article 4 (1) of the Order, it is found that these refer to an exemption from having to comply with certain regulations if written dispensation has been obtained from the Secretary of State for Air before making the flight. Not much help to be obtained there.

We then turn to "A conditions" and "B conditions" of Section VI, Article 60, of A.N.D. 11. "A conditions" lay it down that the flight may only be made if the aircraft has a certificate of airworthiness, is a "subsequent aircraft," that the flight is for the purpose of getting a certificate of airworthiness, or that application for a C. of A. has previously been made. Obviously, "A conditions" do not help us much either. Our last hope is now centred in "B conditions."

Alas, "B conditions" are just as bad. In fact, they are on a par with the deep depression conditions in which Iceland seems to spend most of its unhappy time. In the main, "B conditions" relate to flights carried out under the supervision of "approved" firms, and with aircraft built by "approved" firms.

So there you are. If you are not an "approved" firm, you may not take anything into the air without written permission from the Secretary of State for Air. Bureaucracy can go no farther than that. The Secretary of State for Air has "seen fit" to put the official "kibosh" on all private enterprise. What business has a "disapproved" firm or person to want to take things into that air which is, apparently, the sacred property of the Air Council? What right have such as they to cause air eddies not approved by the N.P.L., with wings and fuselages unknown to Farnborough? If such things were to be permitted, who knows but that some day some totally unknown person, strongly "disapproved" by officialdom, might not be lucky enough to invent and try out some new form of flying machine, or introduce some new principle of flying.

The whole situation is preposterous, and would be comic if it were not fraught with serious consequences. What Divine right gives the Air Ministry powers to prevent any private individual or firm from taking experimental aircraft or engines into the air? The British aviation community has submitted

tamely to one red-tape restriction after another being introduced, until by now no man, unless he be "approved" by the Air Ministry, has a soul he dares to call his own—aeronautically speaking. And even the "approved" firms are barely tolerated. They are regarded by officialdom as very inferior beings to the Air Ministry's "experts," but, of course, they have to be put up with because one could not do without them altogether, unless—blessed inspiration—the Air Ministry were to kill off all private aircraft and engine firms and revert to that happy state of affairs which obtained when Farnborough was the Royal Aircraft Factory and its machines were designed by "the best brains in the country."

By the new regulations, no private experimenter may make a "hop" across his own meadow unless he has got permission from the Air Ministry (in writing). The old limitation—that flights must not be made outside the three-mile limit of an aerodrome—was bad enough, but at least there was traceable in it a sane desire to protect the public on *terra firma* from possible damage. The new regulation seems to be entirely without justification, unless it is the intention of the Air Council to squash all those who are just now keenly interested in the development of low-powered aeroplanes.

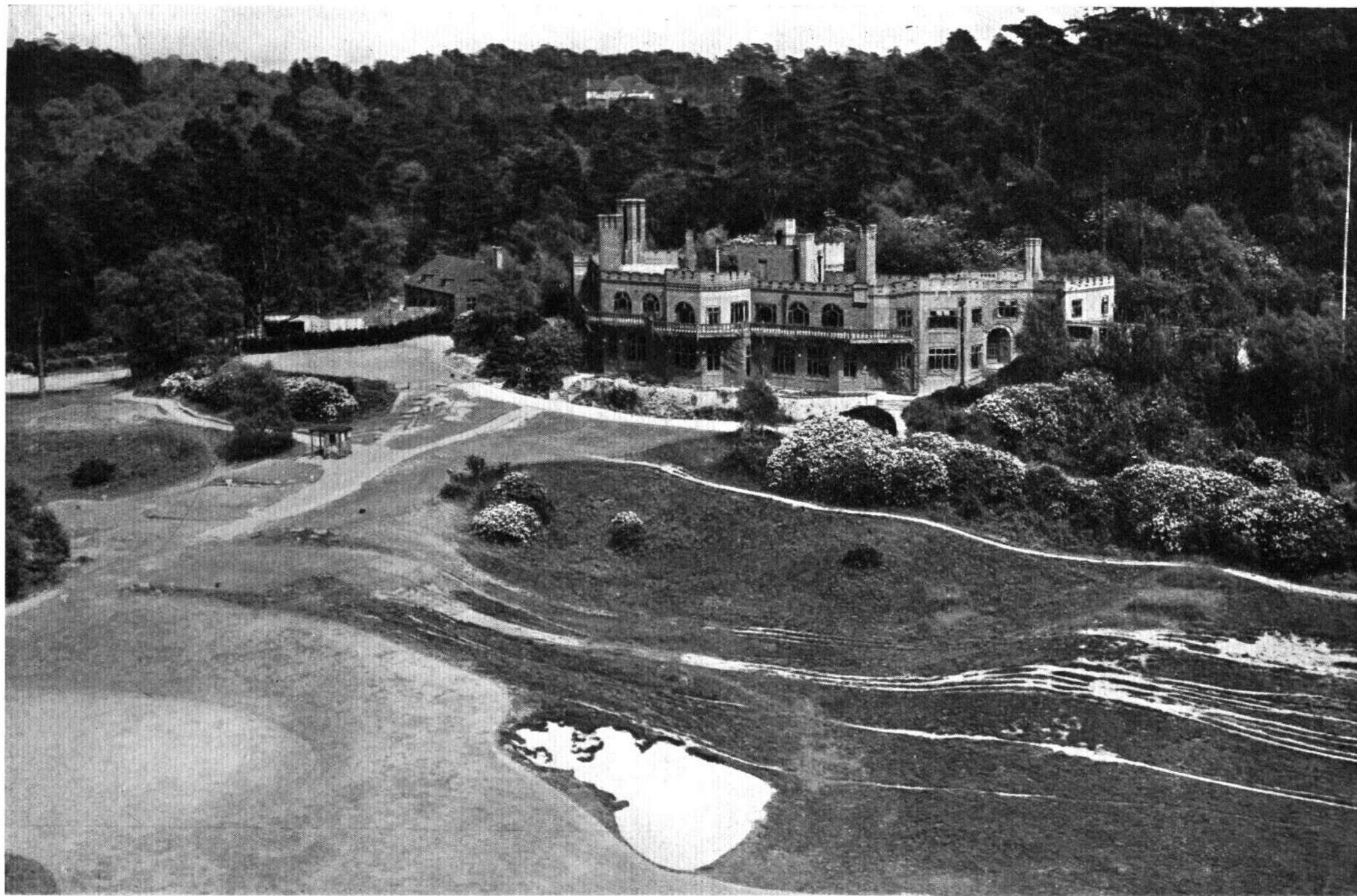
We hope that we are not going to be the means of getting Señor de la Cierva into trouble, but as he is not an "approved" firm, he could, under this regulation, be stopped from testing the new machine which he is now flying at Hamble. That machine is never to be marketed. Consequently no application has been made for a certificate of airworthiness. But on it Señor de la Cierva has carried out invaluable research work which will unquestionably result in the production of better and still better "Autogiros." Must he, therefore, obtain the Air Minister's written permission every time he wants to make a short flight? One could probably think of several others quite as capable as Señor de la Cierva of deciding what is or is not a reasonably "safe" aircraft without asking the Air Ministry.

Even an "approved" aircraft firm is likely to suffer through this ridiculous restriction. Let it be supposed, for example, that an aircraft has been built by X & Co., who are "approved," and that it is a "subsequent" aircraft. Y & Co. may be agents, and may have their aerodrome more than 6 miles from that of X. They may wish to stock a few of X's machines so as to have them ready to sell "over the counter," as it were. The C. of A. will not be wanted until the aircraft is sold, and consequently no application is made for it at once. But X cannot have it flown across to Y's aerodrome because the flight is not a test flight, nor is the aircraft being flown for its C. of A. So every time X & Co. want to fly a machine across to Y's aerodrome to replenish his stock, a special written permission must be obtained. This does not sound very formidable, but getting a decision from the Air Ministry on any subject is apt to be a lengthy business at any time.

This whole subject is one which has influences far outside the sphere of the S.B.A.C., and it will be interesting to see if bureaucracy is to be allowed to "get away with it."







IN CHARMING SURROUNDINGS : St. George's Hill Golf Course at Weybridge, photographed from the air. (FLIGHT Photo.)

# London's Auxiliaries

## Camps in Kent and Sussex

By MAJOR F. A. de V. ROBERTSON, V.D.

"WE shall surprise you some day," remarked the late Sqd. Ldr. Lord Edward Grosvenor at a house dinner at the Royal Aero Club when the prospects of the then incipient Auxiliary Air Force were the subject of discussion. His prophecy has been fulfilled; the Auxiliary Air Force Squadrons of the London Area have surprised not only their critics, but also their well-wishers. There are three bomber squadrons raised in that area, known in the Air Force List as No. 600 (City of London), No. 601 (County of London) and No. 604 (County of Middlesex) B.S. As a matter of fact the names are only names. No attempt is made to discriminate between men whose place of abode may be Cheapside or Westminster or Finchley. London is large enough to support three squadrons, and those three squadrons have to have distinguishing names. They all three use Hendon Aerodrome. None the less, each of the three squadrons is developing its own special tradition. Personalities like Lord Edward Grosvenor, Capt. the Hon. Frederick Guest, Sir Philip Sassoon, and Wing Com. Dore, naturally leave an impress on the units which they command or have commanded. When a new organisation is started it is often useful to have at its head a man with a prefix to his name, and doubly so if that man has held high office at the Air Ministry. Applications are attracted by the reputation of the men at the head of the movement, and it is also useful if the C.O. has some money to spend and is willing to spend it. Apart from that, the men who started the London Auxiliary Squadrons on their way were all men of ability and enthusiasm. Two of them at least had war service in one or other of the flying services. Lord Edward Grosvenor had been in the R.N.A.S., and Wing Com. Dore had been a most gallant fighter in the R.F.C.

Now, however, the day is past when an outside reputation is thought an essential of the commanding officers of the London squadrons. Both No. 600 and No. 601 are commanded by officers who have risen, so to speak, from the ranks of Auxiliary officers. It is now sufficient that the public men should be Hon. Air Commodores of the various squadrons. In this capacity Capt. Guest now acts as patron saint of No. 600, Sir Philip Sassoon of No. 601 and Sir Samuel Hoare of No. 604. The present C.O.'s are all three busy men, but even so, they can still devote more time to the actual work of their units than was possible in the case of Privy Councillors.

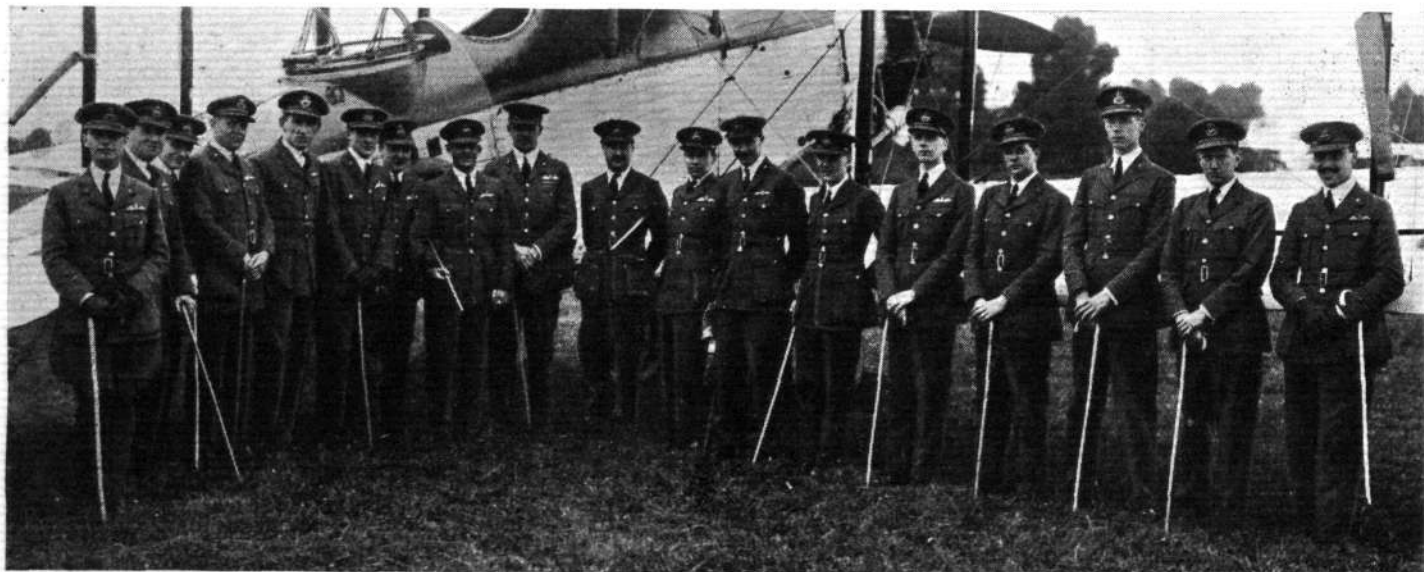
It is a fortunate arrangement that the training season of the Auxiliary Air Force should coincide with the leave season of the Royal Air Force. Aerodromes are vacant and can be occupied by the A.A.F. as camping grounds. This

year Tangmere, near Chichester, has been the temporary home of No. 600 and No. 604 B.S., while No. 601 has visited the civil aerodrome at Lympne. What sum the Air Defence of Great Britain paid as rent to the Civil Aviation Department of the Air Ministry we do not know. Government accounts are not to be understood of the people. At any rate, all three squadrons seemed very happy in their camps, and were well accommodated except when a sudden storm flooded out the tents at Tangmere. Visits to both aerodromes were most instructive and enjoyable, and gave one a good insight into the working of the three London squadrons.

### No. 600 (City of London) (Bomber) Squadron

Since last camp Sqd. Ldr. the Hon. F. Guest has given over the command of No. 600 B.S. and has been succeeded by Sqd. Ldr. S. B. Collett, who previously commanded a flight in the sister squadron, No. 601. The Adjutant is still Flt. Lt. E. A. Healy, who this year again competed in the King's Cup Race. The Assistant Adjutant is F/O. N. C. Singer. The squadron has a strength of 140 A.A.F. airmen, and of these 129 went to camp. There were only 11 absentees, a most remarkable attendance, and these 11 were prevented from attending by circumstances over which they had no control. Most of the airmen slept in the barracks, but about one-third were under canvas, and were washed out on the night of the storm. Tangmere is one of the new standard pattern Air Force stations, and all the buildings are up-to-date.

The day in camp started with physical training before breakfast. No. 600 B.S. felt rather proud of itself for that; at least after breakfast it felt inclined to plume itself on its energy. Flying was got through so far as possible in the morning, so as to allow the airmen free afternoons in which to remember that this was their annual fortnight's holiday. Still, even so, sometimes work had to be done on an engine or a machine continuously until it was fit for the air, and then the keenness of the men was demonstrated by the cheerful way in which they laid themselves out to get the work done. It was very interesting to walk through the workshops of the photographic, wireless and other sections. The squadron boasts five airmen who have qualified and passed their Service tests as photographers, and not one of them is a photographer in civil life. Likewise there are six qualified W/T operators who also do quite different work to earn their living. They have had to pass tests on the ground and in the air as the regulars have to do, and to send 25 to 28 words a minute. All airmen have to do some air gunnery, though in the case



THE CITY : Officers of No. 600 (City of London) (Bomber) Squadron at Tangmere. (Flight Photo.)





URBS IN RURE : Three Westland "Wapitis" (Jupiter) of No. 600 (City of London) (Bomber) Squadron flying over Sussex. (FLIGHT Photo.)

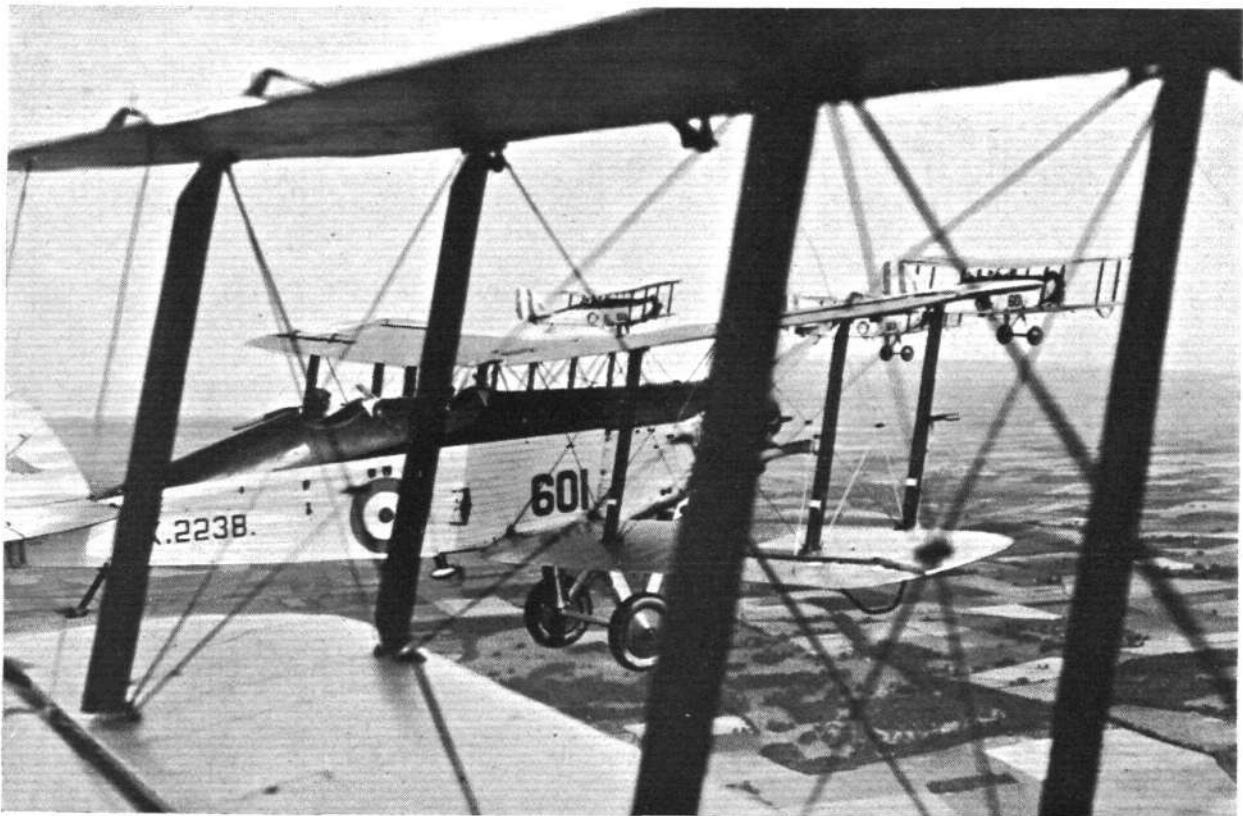
of photographers and other specialists the gunnery has to come after their own trade. An examination of films taken up at random from a number fired in a camera gun showed very good marksmanship indeed.

The regular nucleus of the squadron is three officers (adjutant, assistant adjutant and stores officer) and 38 airmen, of whom five are senior N.C.O.'s. During camp, however, and to a great extent also during the week-ends of the rest of the year at Hendon, the three flights manage their own affairs, and keep their machines and engines in flying condition. The flight commanders really take the responsibility for running their flights, and very busy it keeps them. The adjutant and his assistant are now responsible for flying instruction. Newly-joined officers are

taught to fly *ab initio* in the squadron, while experienced pilots are given courses in flying by instruments under a hood, for which an Avro has been specially fitted up. It soon becomes clear to a visitor that Sqd. Ldr. Collett is in command of a very keen and workmanlike unit, which is a real asset to the defence of the country.

#### No. 604 (County of Middlesex) (Bomber) Squadron

The County of Middlesex B.S. is the youngest of the squadrons in the London group, being only two years old, but already it has made a very fine start in its career. It is very fortunate in its commanding officer, Wing Com. A. S. W. Dore, D.S.O. Maj. Dore, as he then was, commanded No. 43 Squadron, R.F.C., from April, 1917,



GREATER LONDON : No. 601 (County of London) (Bomber) Squadron ranging over Kent. (FLIGHT Photo.)

onwards in France. He succeeded the first C.O., Maj. Sholto Douglas, but he had been in the squadron before he commanded it, and had proved himself a very doughty fighter in the air. Up to the end of 1917 No. 43 Squadron was equipped with Sopwith one-and-a-half strutters, which were gradually outclassed by later German fighters, and at the end of its time the inferiority of the performance of this two-seater was the cause of many casualties among pilots and observers. In these trying circumstances Maj. Dore made a great name for himself and worthily won the Distinguished Service Order. It is claimed that he first initiated the practice of using aircraft to attack ground troops during the third battle of the Scarpe in May, 1917. By a curious coincidence his old squadron, now No. 43 (Fighter) Squadron, is permanently stationed at Tangmere, where his present command, No. 604 B.S., went this year for its annual training. The squadron is also fortunate in its Adjutant, Flt. Lt. F. J. Fogarty, D.F.C., one of the greatest exponents of "crazy flying" ever seen at the Hendon Display.

As yet no Auxiliary officers have been promoted to the rank of flight lieutenant, for it is the policy nowadays not to grant such promotion until an officer has sufficient experience to take over full responsibility for a flight; and this squadron is still young.

At the last Hendon Display No. 604 B.S. took part in the evolutions of the A.A.F. bomber wing, and formed one of the three initials of the force with great accuracy. On the occasion of my visit to Tangmere I saw and admired the way in which the squadron practised various formations, and in particular that which is known to pilots as the Dartmoor Arrow. Some might say the Anchor would be a more seemly description; but when were pilots ever guilty of seemliness in their flying slang? Who ever heard the expression "vertical bank" used in a squadron mess? One feels safe in predicting a great future for the County of Middlesex Bomber Squadron.

#### No. 601 (County of London) (Bomber) Squadron

From Tangmere I moved on to Lympne where No. 601 B.S. was in camp. the officers were under canvas, and the men looked very comfortable on camp cots in the hangars. The C.O. is Sqd. Ldr. Nigel Norman, well known to those who frequent Heston as a man of all-round capabilities. He wears medal ribbons, which is now quite unusual in the A.A.F. and not too common in the R.A.F. below the rank of Wing Commander. One of the flight lieutenants of the squadron, R. G. Shaw, has won the Distinguished Flying

Cross. The latter is an old R.N.A.S. pilot, who belonged to No. 17 Naval Squadron, afterwards denominated No. 217 Squadron, R.A.F. In fact, one of the most notable points about No. 601 B.S. is the number of experienced pilots who belong to it. The C.O. himself has flown over most of Europe and North America. F/O. Rupert Belville piloted Mrs. Montagu over a great part of Central Russia. Flt. Lt. Brian Thynne has flown his own machine to Egypt via Palestine. F/O. Jackaman has flown pretty well all over Europe, and has competed prominently in many a race for the King's Cup. F/O. Lord Knebworth (heir of Lord Lytton) has flown to the Lido and back; and so on. Legislation is represented in the squadron by F/O. T. L. E. B. Guinness, M.P., and Rugby football (we apologise for not putting these two last interests in their true order of importance) by F/O. Reginald Elsmie (Assistant Adjutant), whose serious business in life is to play half-back for the R.A.F. XV.

Naturally these seasoned pilots have known each other intimately for a long time past, and the work in the squadron makes an additional link. They are obviously a happy family, and one and all are enthusiasts on aircraft. Many of them take their own private aeroplanes to camp, and on occasions use them to hurry up to London to transact their private business when squadron duties are over. During camp F/O. Jackaman took delivery of his new Monospar aeroplane which has a glass nose with a searchlight installed inside it. For those who love to see clever flying it is a great treat to watch F/O. the Hon. Drogo Montagu (son of Lord Sandwich) performing in his Klemm.

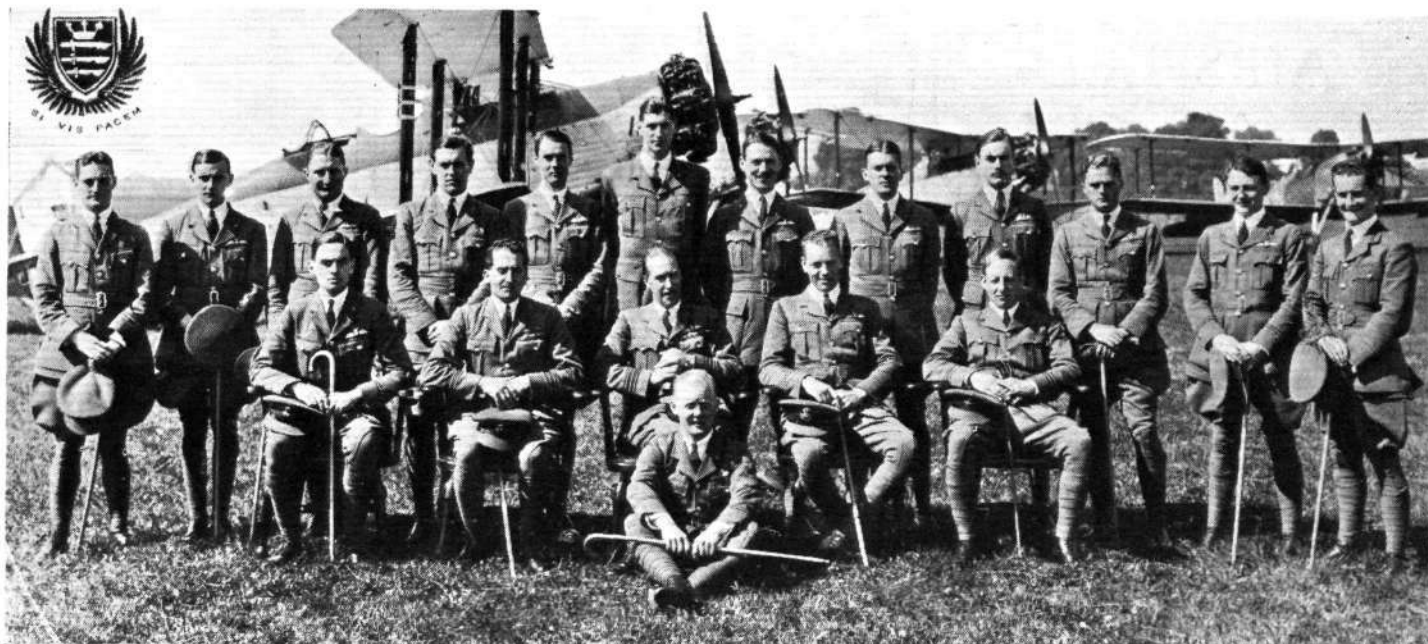
The airmen are as keen and as efficient as the officers. The day's work in camp started with parade at 8 a.m., when the squadron fell in to the trumpet call, and the squadron band was in active attendance. Each flight commander manages all the details of his own flight, and the C.O. and the adjutant (Flt. Lt. D. A. Boyle) are relieved of responsibility in such matters. For instance, on the day of my visit the squadron had been ordered to attend the concentration of No. 1 Air Defence Group at Manston, and orders had been issued the night before to that effect. The C.O. told me that he had not been given any details of what pilots and what machines would take part. None the less, at the appointed time three machines of each flight lined up and duly took off, and the whole squadron performed its part in the concentration without any sort of hitch.

During the camp the airmen gave a taste of their quality by undertaking a rather serious top overhaul of a



"IN SUSSEX BY THE SEA": The County of Middlesex Squadron flying their "Wapitis" to the seaside.





"SI VIS PACEM": The ancient Roman maxim is the motto of No. 604 (County of Middlesex) (Bomber) Squadron, whose officers are here shown in camp at Tangmere.

"Jupiter" engine, which meant putting in 480 man-hours. The work was very well done. I saw something of the work of the photographic and other specialist sections, and much admired its quality. In fact, No. 601 B.S. is a seasoned squadron, and can be counted on to carry out efficiently any work which may be entrusted to it. It is, moreover, strongly of opinion that the Esher Trophy has had quite as much of the air of Birmingham as is good for its health, and thinks that it would benefit by a little whiff of the balmy atmosphere of Hendon.

#### Royal Air Force Squadrons

Other descriptive articles concerning the work of various R.A.F. Squadrons, etc., have been published in FLIGHT as follow:—

H. M. Aircraft Carrier *Glorious*. May 16, 1930.

No. 4 (Army Co-operation), South Farnborough; No. 17 (Fighter), Upavon; and No. 33 (Bomber), Eastchurch. June 27, 1930.

No. 601 (County of London) (Bomber) Sq., A.A.F. (at Lympne). August 15, 1930.

No. 43 (Fighter) Sq. (Tangmere). September 19, 1930.

No. 2 (Army Co-operation) Sq. (Manston). December 19, 1930.

No. 101 (Bomber) Sq. (Andover). April 24, 1931.

Nos. 204 and 209 (Flying-Boat) Sq. (Mount Batten). June 12, 1931.

"1890-1912-1931." (A brief Outline of the Growth of the Royal Air Force). June 26, 1931.

Cambridge University Air Sq. (at Old Sarum). July 10, 1931.

Central Flying School (Wittering). July 17, 1931.

Oxford University Air Sq. (at Eastchurch). August 7, 1931.

No. 600 (City of London) (Bomber) Sq., A.A.F. (at Tangmere). August 21, 1931.

No. 605 (County of Warwick) (Bomber) Sq. (Castle Bromwich). April 1, 1932.

No. 40 (Bomber) Sq. (Upper Heyford). May 13, 1932.

Nos. 7 and 58 (Bomber) Sq. (Worthy Down). June 10, 1932.

A visit to H.M.S. *Exeter* of 2nd Cruiser Squadron, Home Fleet. June 17, 1932.

Oxford University Air Sq. (Eastchurch). July 22, 1932.

Cambridge University Air Sq. (Netheravon). August 5, 1932.

No. 1 Air Defence Group (Auxiliary Air Force and Cadre Sqs.). August 12, 1932.

No. 100 (Bomber) Sq. (Donibristle). August 19, 1932.

Scotland's Auxiliaries; No. 602 (City of Glasgow) (Bomber) Sq. and No. 603 (City of Edinburgh) (Bomber) Sq. September 16, 1932.

#### British Win in Zenith Cup

THE fourth competition for the 2nd "Coupe Internationale Zenith," which has just been held in France, has been won by M. Detroyat on a D.H. "Gipsy"-engined "Puss Moth." Detroyat was the only competitor to complete the 1,669 km. (1,037 miles) circuit—Paris, Lyons, Marseilles, Toulouse, Bordeaux, Tours, Paris. His speed was 182 k.p.h. (113 m.p.h.).

#### Sir Alan Cobham's Next Venture

THE last of the National Aviation Day Displays were held at Woolwich, on October 15, and at Chingford on October 16. Since the campaign opened in April the Display has been given at 170 cities, towns and villages in England, Scotland and Wales, and flying has taken place without a break. Sir Alan now proposes to take the Displays "on tour" in South Africa, where they will visit some 70 towns in the Union with six or eight machines. He hopes to be back again by March next.

#### Graf Zeppelin

THE German airship *Graf Zeppelin*, which left Friedrichshafen on September 26 for South America, arrived at Pernambuco on September 29. The return trip started on October 1, and as a mark of sympathy with Catalonia on the grant of autonomy the airship landed at Barcelona aerodrome on October 3, later resuming her flight, and reaching Friedrichshafen next day. On October 9 the airship again set out for South America, reaching Pernambuco on October 12.

#### News of an Old-timer

FOR a good many years we had lost sight entirely of Mr. "Jimmy" James, one-time test pilot to the Gloster Aircraft Co. and winner of the Aerial Derby. We have now received from "Jimmy" a short note in which he

informs us that he is contemplating a return to aviation. As he has had a good deal of practical experience of maintenance and repair in various forms of road transport since he left aviation, he is willing to accept a "ground job" where this experience can be utilised, but we suspect that if possible "Jimmy" would prefer a flying job. In spite of his long absence, it should not take him long to "get his hands in" again. Anyone with suitable employment to offer is asked to write c/o Rev. N. W. Hagger, 3, Vicar's Court, Lincoln.

#### The G.A.P.A.N. Navigation Classes

IN FLIGHT for September 23 we announced that a series of lectures would be arranged by the G.A.P.A.N. starting on November 8 for those who wish to take their first and second class navigators' licences. The fees to be charged for these were the extremely reasonable sums of £8 8s. and £5 5s. respectively. Despite this, however, the response has been distressingly small, so much so that unless a greater number of applications is forthcoming it will be found impossible to hold these classes, and those who have already applied will therefore be deprived of this unique opportunity of working up for their examination. A second class navigators' licence is a vital necessity for every pilot in commercial aviation, and those who intend to sit for this examination should send in their names at once to Capt. A. G. Lamplugh, c/o The Guild of Air Pilots and Air Navigators, 61, Cheapside, E.C.2, and mark envelopes "Navigation."

#### The Fairey "Seal"

THE official name of IIIF aircraft, fitted with Panther engines and supplied for the use of the Fleet Air Arm, is "Seal." This name is to be used in all correspondence and reports relating to this type of aircraft.

# AIRSPEED A.S. 5

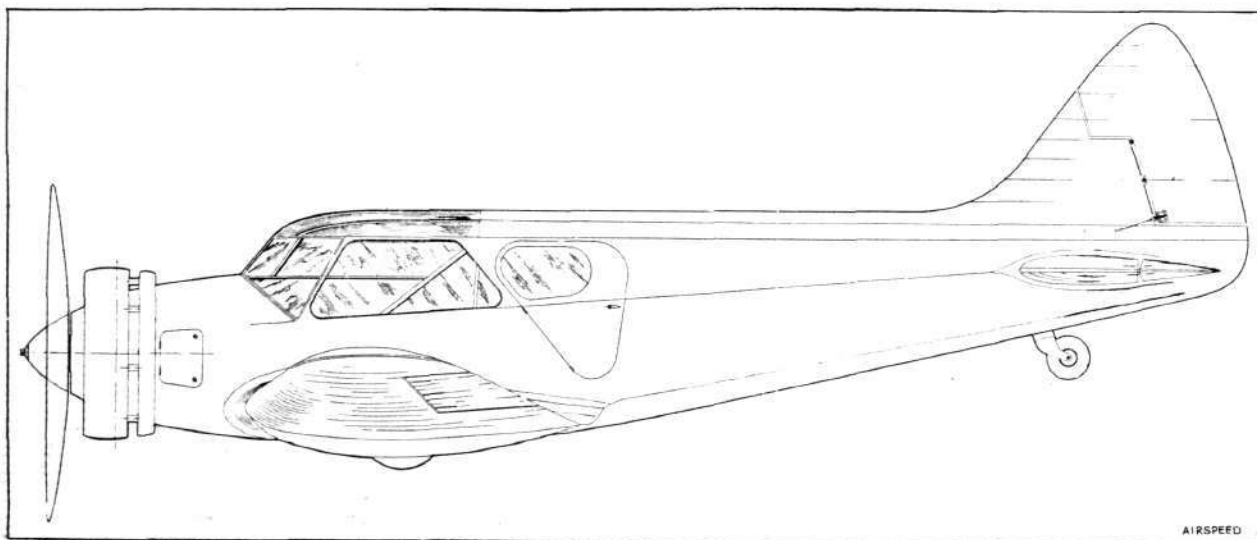
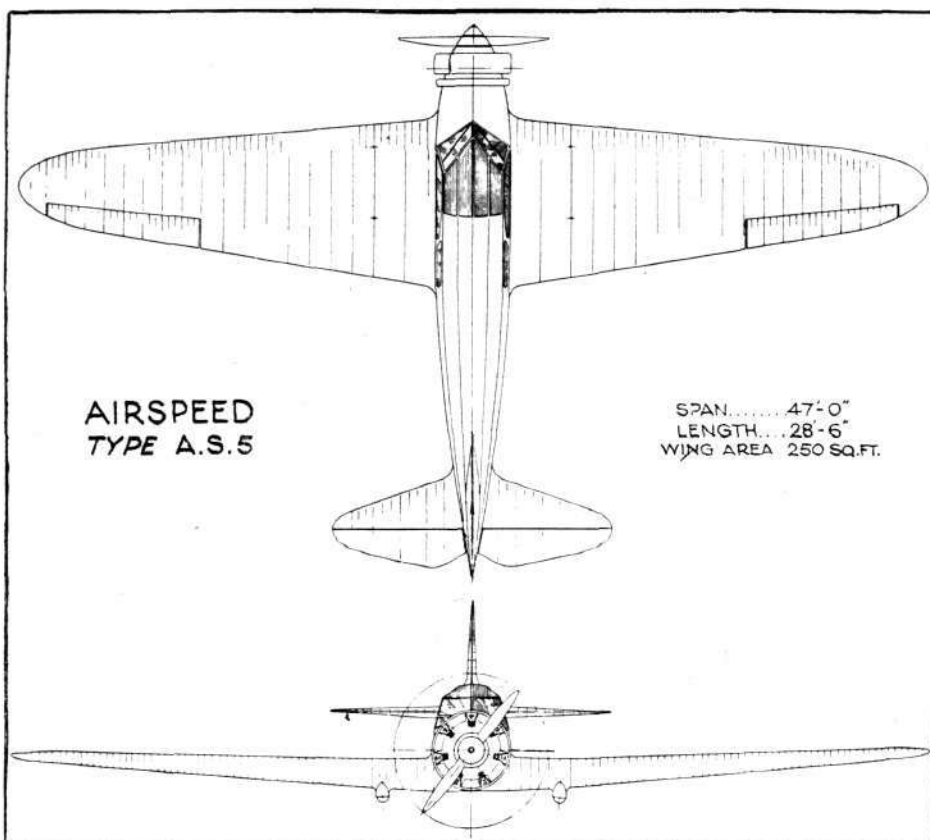
**D**ESIGNED by N. S. Norway and A. H. Tiltman, of Airspeed, Ltd., Piccadilly, York, and now in course of construction at the York works of that company, the machine illustrated here is the first British low-wing civil monoplane to incorporate in its design a retractable undercarriage. For this reason the design is of more than ordinary interest, and we have thought that our readers will appreciate a little advance information about the machine, which is not yet ready, and therefore scarcely on the market, although as soon as the first example has been finished and flown, it will probably not be long before others follow, as the machine has many attractive features and is of a size and seating capacity which should make it popular.

The A.S.5, which will be marketed as the Airspeed "Courier," is a four-six-seater single-engined low-wing cantilever monoplane, fitted with Armstrong-Siddeley Lynx engine of 240 h.p. Other makes of engine of comparable power and weight can be fitted instead if desired, but the reputation of the Lynx for reliability is such that it would be very difficult to suggest a more suitable power plant.

As the outline drawings show, the "Courier" is of very clean design, apart from its retractable undercarriage. The cantilever wings have a pronounced taper in thickness as well as plan form, and where they join the fuselage the trailing edge is raised considerably, resulting in a decreased angle of incidence. Extensive researches in Germany, especially on Junkers monoplanes, have shown

bolted directly to it. A choice of seating accommodation in the cabin is provided. Either the machine can be used as a six-seater, when little or no luggage can be carried, or it can be arranged as a four-seater, and a generous quantity of luggage can then be accommodated.

The retractable undercarriage is hydraulically operated, and is so arranged that when the wheels are fully retracted, they still project sufficiently below the level of the



that the phenomenon now known as "buffeting," which is an oscillation of the tail at large angles, and to which low-wing monoplanes appear prone, is likely to be less pronounced, or may even be avoided altogether if interference at wing-fuselage junction is reduced by raising the trailing edge.

The wing is built with a centre section of 10 ft. 2 in. span permanently attached to the fuselage. When the outer wing pieces are removed, this is therefore the "folded" width of the machine. Only four bolts have to be undone to remove the wings.

Structurally the "Courier" is quite straightforward, with a plywood-covered fuselage and wooden wing with fabric covering. The front portion of the fuselage is of welded steel tube construction, the engine mounting being

wing to be usable as wheels, so that in the unlikely event of the mechanism sticking, it should still be possible to land the machine safely, except possibly for a broken propeller. Oleo-pneumatic shock absorber legs are used, and give a travel of 9 in.

Two alternative tank schemes will be arranged, the one giving a range of 450 miles (724 km.) and the other a range of 780 miles (1 255 km.), the useful load being adjusted correspondingly.

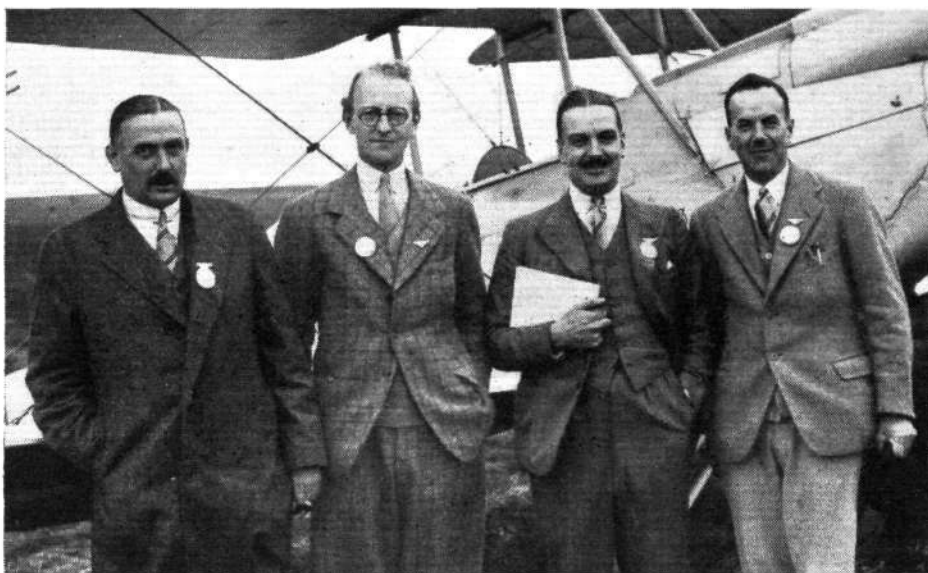
The permissible gross weight of the "Courier" will be 3,200 lb. (1 452 kg.), and the disposable load 1,350 lb. (612 kg.). The wing area is 250 sq. ft. (23.2m.<sup>2</sup>), and it is expected that the maximum speed will be more than 150 m.p.h. (241 km./hr.), while the estimated cruising speed is about 130 m.p.h. (209 km./hr.) at 1,000 ft.



# From the Clubs

## CARDIFF AERO CLUB MEETING

THE Cardiff Aero Club have put in a year's hard working since the opening of the Municipal Aerodrome at Splott, when the occasion was marked by a very excellent meeting, attended by exceptional weather and a large number of visiting machines. A number of licences have been obtained under the instructorship of F/O. J. Bunning, and pupils have come from all parts of South Wales. The club has, however, found certain difficulties in the lack of suitable accommodation for members and machines, and during the past season only one machine has been available, the accommodation for which had to suffice for members also. All this has now been rectified, and the Cardiff Municipal Airport can boast of as fine a hangar as can be seen on any other aerodrome in the country. The meeting held on Saturday, October 15, was in effect the christening. A splendid piece of voluntary work on the part of the members converted the erstwhile hangar into a most comfortable club-house within twenty-four hours—including floors and wall hangings, and the result was distinctly cheering, as although visibility was good, the wind was cold and blustery. This had an effect on the attendance of the general public, but a most representative selection of machines turned up, one in particular—the Monospar (2 Pobjoys)—belonging to Mr. A. C. M. Jackaman providing a great amount of interest, as this is the first time the production model of this interesting aeroplane had been seen in the West of England or Wales. An excellent lunch was available for visiting pilots and guests, and it was encouraging to note that many prominent Cardiff people had turned up for the function, including Sir Illtwyd Thomas, who is Chairman of the Cardiff Development Board, and obviously has his eye on the possibilities of aviation in South Wales. Recently, an air ferry service was instituted between Cardiff and Bristol by Norman Edgar, of Bristol Airport, and has been responsible for an increase in airmindedness in the South Wales districts, Swansea being particularly cognisant of



CARDIFF PERSONALITIES: Left to right, R. Cadman; Charles H. Keen (Chairman); K. Davies; Evan Roberts.

the fact that its great rival has made one step ahead. The presence, therefore, of some of the Swansea "fathers" on the aerodrome may be taken as an indication that the Corporation are looking into the question of an airport, as was recently discussed in Council. This is all to the good, as apart from the individual joy riding concerns which have been operating during the summer at the resorts, South Wales does not see too much flying.

### Nine Starters from Heston

The meeting itself was marked by at least one outstanding success—the race from Heston to Cardiff—as this was one of the finest examples of the handicappers' art (Messrs. Rowarth and Dancy) yet seen in a race in Britain.

Late in the season as it was, the competitors in the Heston-Cardiff race assembled in fine weather at Heston during the morning.

The meteorological experts at the Air Ministry forecasted a wind strength near the ground of 15-20 m.p.h., with gusts up to 30 m.p.h., possibly some rain on the way, but, in general, visibility good. At 2,000 ft. the wind strength increased to 30-35 m.p.h., and veered from about W.N.W. to N.N.W.

The course, a total distance of 120 miles, was from Heston to a turning point at Beechley, near Chepstow,



THE WINNER: Mr. M. D. L. Scott, the first in the Race, in his "Puss Moth" (Gipsy III).



THIRD HOME: Miss "Delia" Crossley, who finished third, in her Comper "Swift" (Pobjoy).

HESTON-CARDIFF RACE, 15.10.32

and thence to Cardiff's Municipal Airport at Splott.

The inspection of the aircraft during the morning passed without incident. The start was timed for 1.28 p.m., because the Cardiff Aeroplane Club had requested that the finish of the race should be at approximately 3.0 p.m.

As is usual when starts are at Heston, the indefatigable Miss "Susan" Slade did valiant work in collecting together the pilots and getting them to the starting line. Mr. L. H. Stace, on the "Spartan" 3-seater, Mark II, met with a slight mishap when taxiing down wind to the starting line. The aeroplane tipped on its nose, with the result that although only slightly damaged the Fairey all-metal airscrew had to be changed for one of the wooden variety. To enable this to be done the start was delayed a few minutes, but in spite of the fact that the new airscrew was obtained and fitted in roughly 25 min., Mr. L. H. Stace was 2 min. 10 sec. late in departing. Apart from this the start was without incident.

A "Puss Moth" Wins

The first machine—a "Puss Moth" (Gipsy III)—piloted by Mr. M. D. L. Scott, of Eastern Air Transport, Ltd., was closely followed by Mr. A. J. Styran's Comper "Swift" (Gipsy III) and Miss Fidelia Crossley, also in a Comper "Swift" (Pobjoy), whilst Mr. F. R. Walker, on yet another "Swift" (Pobjoy) was only a few seconds behind. Then followed the "Gull," another "Swift," and some "Spartans," together with the Monospar, the whole entry having arrived within 4 min. 30 sec. Mr. Jackaman tells us that he was nursing his new engines and therefore not flying at full throttle, which accounts for the low speed he made, much less than the Monospar can do, of course. The fastest time was put up by Mr. Styran's "Swift," at the average speed of 144.75 m.p.h.

"Swift" gets Two Trophies

The Aerobatic competition attracted three or four entries, and was deservedly won by Mr. Christopher Clarkson on a Comper "Swift." This was followed by a landing competition, Mr. Edgar Percival scoring by being nearest to the predetermined mark. Then came Cardiff's great joke—the Hidden Treasure competition—the treasure in this instance being a gold pencil, which was secretly buried by the ground engineer, Mr. Watkiss. The winner of this competition was the one who, quite unknowingly, landed nearest the burial place—similar to the spot dance competition which takes place at some dances. It was, of course, essential that no one should know the exact place—and up to the time of writing no one does, including the ground engineer! Frantic searches on the part of officials who scoured the aerodrome looking for the place where the treasure "ought to be" were unsuccessful, and so the treasure still remains hidden. Various explanations have been freely offered, one which sounds most reason-

able being that somebody did a tail skid landing on the very spot, and completely disintegrated the treasure—others include the suggestion of making the G.E. do the chalk line test.

However, it was decided that Mr. F. R. Walker landed nearest to the spot where it was thought the pencil should have been, but of course it was impossible to present the prize at the dinner! The "instruction to pilots" given all visitors strikes a quiet note of humour in stating "the hidden treasure is well worth finding."

A word must be given to the microphone announcer—Councillor Cuthbert Purnell, Deputy Chairman of Cardiff Watch Committee, and an ex-R.A.F. pilot. Mr. Purnell has obviously kept himself well informed of events in the aviation world, as his announcing was technically perfect, and he had all the details of present-day machines at his finger tips. His subtle references to well-known local people who happened to pass in his view were much relished by the spectators—Mr. Purnell should be retained for this job in future. Flying control was in the efficient hands of Dick Ashley Hall, of the Bristol Club, who was officially appointed by the Royal Aero Club for this trying task, and no one worked harder for the success of the meeting. He was ably supported by the directors of the club, including Mr. Kenneth Davies, Mr. Cadman, Mr. Charles Keene (who found an even more exciting profession on Sunday morning, being equipped with a natty white coat, cocktail shaker bar and manner all complete) and the indefatigable secretary, Arthur Davies. The hospitality of the Cardiff Club is second to none—every effort being made, and successfully, to ensure that all guests would remember the spontaneity of their welcome. It was disappointing, therefore, to the members of the club that this should have been spoiled by the action of the police who visited the aerodrome to inspect pilots' licences. This is the second time Cardiff has brought itself into undue prominence over the matter of licences. Visiting pilots are always willing to further the interests of the Airport (which belongs to the Corporation), but it must not be forgotten that they have many other ways of spending a Saturday afternoon, and this summary treatment has created a good deal

| Reg'n Mk. | Pilot             | Aircraft and Engine               | Start                | Finish               | Av. Speed    | Place  |
|-----------|-------------------|-----------------------------------|----------------------|----------------------|--------------|--------|
| OB ..     | L. S. Ash ..      | Arrow (Gipsy II)                  | h. m. s.<br>13 34 00 | h. m. s.<br>15 07 34 | m.p.h.<br>77 | 8th    |
| TR ..     | L. H. Stace ..    | Spartan 3-str. II<br>(Hermes IIB) | 13 40 35             | 15 07 37             | 82½          | 9th    |
| UA ..     | Miss Crossley ..  | Swift (Pobjoy R)                  | 13 57 04             | 15 03 39             | 108          | Third  |
| VP ..     | A. C. M. Jackaman | Monospar (2 Pobjoy R)             | 13 59 38             | 15 06 42             | 107½         | 7th    |
| ZC ..     | N. Comper ..      | Swift (Pobjoy R)                  | 13 59 56             | 15 05 17             | 110          | 6th    |
| ZF ..     | F. R. Walker ..   | Swift (Pobjoy R)                  | 14 00 15             | 15 04 02             | 113          | 4th    |
| OF ..     | M. D. L. Scott .. | Puss Moth (Gipsy III)             | 14 01 26             | 15 03 04             | 116½         | First  |
| UR ..     | E. W. Percival .. | Gull (Hermes IV)                  | 14 09 09             | 15 04 41             | 129½         | 5th    |
| WH ..     | A. J. Styran ..   | Swift (Gipsy III)                 | 14 13 22             | 15 03 06             | 144½         | Second |



THE START : Capt. Dancy "dropping the flag" for Miss Crossley who flew her "Swift" into third place in the Heston-Cardiff Race. Next to her in the line, Mr. Jackaman's Monospar looked very resplendent. (FLIGHT Photo.)



of unfavourable comment. One realises that the police are acting within the limits of duty, but the moment would appear ill chosen, in view of the fact that many of the pilots had flown some hundreds of miles to support a Cardiff institution. Everybody realised, of course, that the action in no way reflected on the Cardiff Aero Club, as was so clearly pointed out by Flt. Lt. N. Comper in a speech at the dinner, and flying has not yet reached the stage when a little leniency to guests may not be afforded.

During the whole of the meeting joyriding was in progress in "Fox Moths" and "Puss Moths," by arrangement with Norman Edgar, of Bristol Airport.

The dinner at the Angel Hotel was a very bright affair, and the speech-making brief and pleasant. The prizes were presented to the successful competitors by Mrs. Charles Keen, and included an award for a novel event—a Challenge Vase to the entry containing the greatest number of one-make machines, either a firm or a club, and this was won by Comper Aircraft, Ltd.—four machines of this make being represented in an entry of nine planes for the Heston-Cardiff race. Dancing and accompanying pursuits passed a pleasant evening until midnight, when the effect of the Welsh licensing laws became apparent.

Among those present at the meeting were:—

*Monospar*.—A. C. M. Jackaman; *Moths*.—R. Ashley Hall, L. Leaver, F. D. Bradbrooke, Wing Comdr. Alan Dore, Whittome, C. W. A. Scott, C. R. Cubitt; *Puss Moths*.—Messrs. Scholes, Bowling, M. D. L. Scott, Edgar; *Fox Moth*.—W. N. L. Cope; *Comper*.—Messrs. Clarkson, Styran, Bentley, Walker, Comper and Miss Crossley; *Spartan*.—Messrs. Tapper, Malone, Ash; *Percival Gull*.—E. Percival; *Redwing*.—Messrs. Wilson and Thomas.

### THE HAMPSHIRE AEROPLANE CLUB

The amount of flying at the club has gone up with a rush during the last fortnight, over 65 hr. being put in on club machines. Four members have gone solo during this time, among these being Capt. Peters, R.N., a member of the R.N.F.C., who renewed his instruction after being away since June. Others were Dr. R. Simmons and Mr. A. Jorgensen, who has come over from Denmark to learn to fly. The Annual Dinner and Dance of the Club will be held at the South Western Hotel, Southampton, on Friday, December 2. It is hoped to enliven the proceedings by the first show of the club film entitled "Hells Vultures." This film is guaranteed to be very entertaining. It has been produced by the club members during the summer months.

### BROOKLANDS

Four new members joined during the last week, including Mr. Midgley, who hopes to take his "B" licence shortly. The system of trial lessons instituted some little time ago is proving very popular, as at the end of the



**NOW A TRAINER:** After doing much good service with the R.A.A.F. this D.H. 9 (Siddleley Puma) is now the chief training machine of the Victoria Aero Club.

quarter of an hour's flying in a machine fitted with full dual control the instructor is able to estimate the pupil's aptitude with considerable accuracy, and may thus be able to save anyone, who is physically or temperamentally unsuitable to be a pilot, many pounds in training fees which would otherwise be wasted. Mr. Morad and Mr. Parashar should both complete the tests for their "B" licence shortly, providing the weather permits. The Junkers and "Hendy 302" belonging to Personal Flying Services, Ltd., are now familiar sights on the aerodrome. The former has been very busy piloted by Capt. Ledlie, while the latter is awaiting its new C. of A. after overhaul.

### MAIDSTONE AERO CLUB

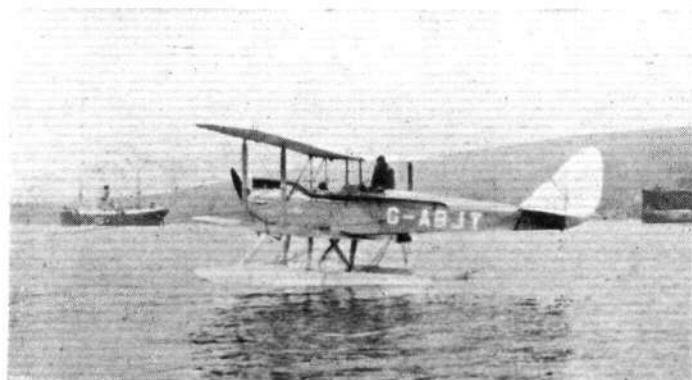
On Sunday, October 16, the Rochester and Chatham District Motor Club held a rally and gymkhana at the Maidstone Aero Club. The event was a great success, particularly as many of the visitors were enrolled as members of the Aero Club. An Autumn Dance will be held at the club-house on Friday, October 21, at 8.30 p.m. Those wishing to attend this function should make early application for tickets (10s. 6d. double, 6s. single), as accommodation is limited. On Saturday, October 22, there will be a Clay Pigeon Shooting Sweepstake Competition, and the following Sunday a Landing Competition has been arranged for a Challenge Trophy presented by the club. Non-members are invited to compete, the entrance fee being 1s. The winner of each competition will receive a silver spoon, and the holder of the most spoons at the end of the year receives the trophy. On Sunday, October 30, visitors from other flying clubs are specially invited. Those from the Surrey Aero Club, Gatwick, are attending in force, and competing with the Maidstone members in a series of contests. It is hoped that other clubs will co-operate in this scheme and enable it to be made a monthly institution.

### HANWORTH

The workshops at Hanworth Park have now been officially approved for the manufacture and release of aircraft parts, as well as the overhaul, repair, modification, and re-conditioning of all single-engine aircraft and all types of unsupercharged aero engines. This approval expressly includes "Autogiros." The proprietors are also the sole manufacturers, agents and distributors of "Desoutter" aircraft spares. Fine weather during the past week has given a fillip to club flying. Besides instruction, quite a large amount of taxi work has been done, and night flying was carried out until late on Wednesday night, October 12.

### READING

Excellent weather during the past week has ensured not only a large number of flying hours but a large number of "riding hours" at Woodley aerodrome. This latter innovation is to be commended, for undoubtedly the "fitter" members are, the better pilots they make. Mr. Miles who, as mentioned in *FLIGHT* last week, is now busily engaged at Reading, has officially joined the firm as Technical Manager of the Service Department, while



**A PRIVATE OWNER'S SEAPLANE:** Mr. C. W. T. Guthrie's "Moth" seaplane at anchor in the Gare Loch; as described in "Flight" last week, it was delivered to Scotland by Capt. Stocken recently.

Mr. Stisted, one of the directors, is acting as Business Manager. Another appointment to the Board of Directors is that of Mr. Cliff, who until recently managed the Bristol branch of Phillips & Powis (Reading), Ltd. The new hangar, which is being put up to increase the scope of the Service Department, is rapidly approaching completion, and when finished will enable that department to tackle any problem which it is set. A dance will be held at the club-house on Saturday, November 12, when it is hoped that many friends from other clubs will attend. Tickets (7s. 6d. double, or 4s. 6d. single) may be obtained from the Hon. Secretary or the Treasurer.

### IRISH AERO CLUB

The new Council of the Irish Aero Club has not been long in getting to work, and its first act has been to announce a reduction in subscriptions and abolition of entrance fees. The new rates will be:—Flying members, £4 (instead of £5) per annum, and ground members, £1 (instead of £1 10s.) per annum. Flying rates:—£2 per hr. dual instruction and £1 10s. solo remain the same. Mr. R. G. Hall, Terenure, Dublin, has won the free course of twenty hours' instruction offered in the club sweepstake, but he has not yet put in an appearance to claim his prize.

### JUNIOR AERO CLUB

True to their policy of dining all persons who perform notable feats in aviation, the Junior Aero Club is giving a dinner on November 1, at which the guests of honour will be Flt. Lt. Uwins and, it is hoped, Professor Piccard. Those who wish to attend this dinner should apply for

tickets (4s. each) to the Secretary as soon as possible, as the accommodation is limited.

### SOUTHERN AERO CLUB

The Southern Aero Club was a hive of industry when we visited it on Sunday, October 16, and we learnt that the amount of flying being done by the club is increasing very considerably. This is very gratifying, as the club has been through considerable vicissitudes recently, and at one time it looked as if it might be necessary to close down. Due to the reorganisation and combined untiring efforts of Mr. M. H. Volk and Miss Birkett, however, large numbers of new members have been obtained, and the number of flying hours they put in increases week by week. Our old friend, Mr. C. L. Pashley, known at Shoreham since the very earliest days of flying, is still the chief instructor of the club, and the members should feel grateful that they are able to obtain the benefit of his vast experience—Mr. Pashley must by now have put in a greater number of instructional flying hours than anyone else in the world. Mr. Henderson, of the Hendy Aircraft Co., has now taken over the repair shops of Southern Aircraft, Ltd., and besides repair work he is busy on the production of at least two new aircraft. That, being built for Mr. Rupert Preston and several of his friends, promises to have something out of the ordinary in the way of performance for its type, and we look forward to seeing its Pobjoy engine opened up for the first take-off early in January. Mr. Henderson has had a great deal of success with his low wing designs, and the advent of both this machine and his next more ambitious model will, therefore, be awaited with interest.



## A MONOSPAR ON THE CONTINENT

THE Monospar, which was fully described in FLIGHT for April 22, 1932, has recently returned from a demonstration flight on the Continent, and the following account should be of interest in showing the fine impression which really modern and practical British aircraft can make in other countries. On October 1 Mr. H. J. Stieger, Managing Director of General Aircraft, Ltd. (and designer of the Monospar), together with Mrs. Stieger, piloted by Flt. Lt. H. M. Schofield, left Croydon in the early hours in G-ABUZ (two Pobjoy "R" engines), and after breakfasting at Le Bourget, went on to Lyon for lunch. After lunch they started for Marseilles, but soon after passing Vienne the oil pressure gauge on the port engine showed that something was wrong, so, shutting down that engine, they returned to Lyon on the starboard engine only. A short inspection showed that a filter was the cause of the trouble, and after this was corrected the machine was

got ready for an early start again the following morning. Punctually at 7 a.m. the next day they left for Marseilles, where they arrived at 8.45 a.m. after a pleasant flight, despite early morning mists in the valleys. An interesting, but painful, fact was the clouds of mosquitoes through which they had to fly; these insects were so thick that not only were all the crew severely bitten, but the leading edges of the wings, and the nose of the fuselage were covered with gory masses of these pests. Despite the fact that it was Sunday morning, the local representative of "Shell" was already on the aerodrome waiting for the machine. His prompt and efficient service enabled a take-off to be made without any delay at all. There was a head wind near the ground, but this decreased at about 6,000 ft., and at this altitude a course was set for Cannes.

Antibes, Nice and Monaco were all passed in glorious sunshine, during which time the crew were fully engaged



IN ROME: A cheerful group before the Monospar in Rome. Mr. H. J. Stieger is fourth from the right and Flt. Lt. Schofield third from the left.

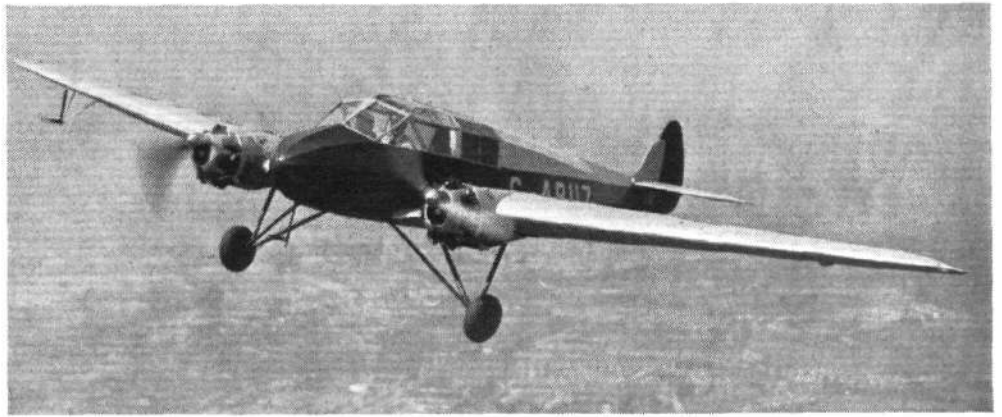


in endeavouring to exterminate the numerous mosquitoes, which were evidently bent upon getting an easy trip to warmer climates. (The registration lettering then appeared peculiarly apposite.) As Bordighera came near, clouds started to gather, causing a descent in the region of Genoa. The prohibited area at Spezia caused some trouble, but eventually a convenient gap was found into a valley in the mountains, through which they were able to fly to Pisa. Mrs. Stieger, who was determined to prove that the Monospar was in every way a modern comfortable machine, had taken a plentiful supply of knitting with her, and by this time her first jumper was already assuming a finished looking condition. After lunch at Pisa the local inhabitants were obviously astounded to see the engines of the machine started up without assistance from outside the cabin. An uneventful flight was then made on to Rome, where the tropical conditions caused winter underclothing to be shed at the first opportunity.

October 4, 5 and 6 were spent at Rome, where numerous demonstrations were given, the machine being flown by many test pilots, Government and Air Ministry officials, and also by the Italian Air Ministry Experimental Camp test pilots. The latter in particular were extremely impressed by the capabilities of the Monospar to fly on one engine, a qualification which had been held in doubt prior to the arrival of the machine. This capability was amply demonstrated throughout the trip, even when flying over some of the high altitude aerodromes, and this, combined with the wing folding and the starting of the engines from the cockpit, never failed to cause expressions of admiration from all those who witnessed them.

On October 7 Rome was left for Milan via Pisa. Over the Appenines the weather became bad, and the coast was followed to Sarzana. Here the intention was to try the valley through Pontremoli, Borgo Valdi and Parma, but eventually the course had to be laid right over the top at 11,000 ft. It was here that the confidence inspired by the two engines showed itself to the full, and at no time did the crew have any feeling of uneasiness, which they might have done, in a single-engined aircraft. A gap was discovered on the other side near Piacenza, after which the railway was followed to Milan.

The following day, October 8, was once more spent in demonstrations, the "Monospar," as usual being well received by everyone. Particularly was this so when several manufacturers witnessed demonstrations at Cinisello aerodrome, which was also visited during the day. Weather conditions then made a departure impossible until the 10th, when the "Monospar" was able to reach Bellinzona, where a landing had to be made amongst the cows after a flight which touched the shores of the Lakes Como and Maggiore. After an hour or so an attempt was made to get away, but despite climbing to some 15,000 ft. no break was found in the weather anywhere. Furthermore, the tropical conditions in Rome had now changed to thoroughly wintry ones, with snow falling in most places. The Swiss Army were manœuvring everywhere at Bellinzona, and when the second landing was made, machine gunners were running across the aerodrome to the right, cavalry charging to the left, infantry shooting ahead and martial music coming from the rear! The President of the Aero Club, a most delightful person, who is also a Justice of the Peace and the proprietor of the leading wine store, received the party and entertained them royally. Once more the exceptional facilities offered by the Shell organisation were in evidence, and although the



**UNRESTRICTED OUTLOOK:** Our photograph emphasises the fact that the pilot of a Monospar never suffers from being unable to see in any direction  
(FLIGHT Photo.)

representative could not get down to the aerodrome, he immediately told the travellers where they could find all the petrol they required, and on hearing that they were "Shell Carnet" holders, invited them to help themselves and then to drop him a note saying how much they had taken (the Shell Carnet scheme was fully described in FLIGHT for September 30, 1932).

About midday the following day, the weather began to clear, and "BUZ" took off at about 2 p.m. The Lukmanier Pass was made for, and after climbing to 12,000 ft., it was found possible to get through the valley at Disentis. Finally a landing was made at Zurich an hour and a quarter after leaving Bellinzona. During the following day the machine was flown by many of the leading Swiss pilots, including Mittelholzer, who was very favourably impressed.

On the 13th the machine was taken to Berne for further demonstrations, and while there passed the acceptance tests by the Swiss Air Ministry. Both the take-off and landing tests were so conclusive, despite the altitude of the aerodrome—2,000 ft. above sea level—that only one test was necessary in each case. In the evening the journey was continued to Lausanne, where, notwithstanding the rugged nature of the country, the authorities have been able to make quite a sound aerodrome. The next day, the 14th, the machine was taken back to Zurich.

On the 15th the party left for Paris, and as far as Basle the weather was rough, but the visibility good. Here Mrs. Stieger had, unfortunately, to leave the machine and retrieve her small daughter, who had been thriving in Switzerland for some time. She naturally did not like the idea of descending to mere surface transport for the return journey, but had the satisfaction of having laid in a large stock of knitted wear, due to the comfort provided by the Monospar. Paris was made without further incident, except the torrential rainstorms which were met with.

The return flight from Le Bourget to Croydon was made in rather filthy weather on October 16. Col. Strange and Mr. John Lord had been met at Le Bourget, where they were waiting to proceed abroad on a demonstration trip with the Spartan "Cruiser." Miss Spooner was also there, having arrived from Lyon. The total flying time for the tour was 34 hr. 5 min., and during the whole of this time no work was done on the air frame whatsoever. Attention to the engine was confined to minor adjustments, cleaning the oil filters, etc., and everything went perfectly throughout, under conditions which varied from the almost tropical heat of Rome to the bitter cold over the Alps.

A word should be added in appreciation of the way in which the Aviation Department of the A.A. prepared the maps which were used throughout the journey.



#### Italian Air Manœuvres

On September 29 and 30 an elaborate rehearsal of an air attack on Rome was staged. Bomber aircraft endeavoured to bomb points in the city, and all the defence measures of fighter aircraft, observation posts, anti-aircraft guns, and searchlights were brought into play. The most

interesting part of the exercise was the orders issued to the civil population, who were obliged to take cover and obscure lights as though the warfare were real. The ambulance parties patrolled the streets, and apparently seized as victims any people who had disobeyed the order to get out of the streets.

# Air Transport

## Imperial Airways Directors' Report

THE Directors' Report of Imperial Airways, Ltd., reveals a net profit for the year ended March 31 of £10,187 as against £27,140 for 1930-31, and the dividend is being maintained at 3 per cent. by drawing on the balance forward, which is reduced from £31,556 to £25,201. Traffic had increased during the spring and summer months, although freight decreased, but the financial results were adversely affected by the late delivery of certain new aircraft, the lack of which restricted the earning capacity of the services and delayed the opening of the African route extension to Cape Town. During the six months to September 30 last 37,465 passengers were carried, as compared with 30,624 for the whole of the preceding year. Referring to Empire services, the report states that that part of the new fleet destined for the Eastern section of the Indian route was put into commission during the latter part of the year under review, and the passenger traffic on this line had improved. Owing to the uncertainty of tenure of the Persian coast route, arrangements were made to operate along the alternative Arabian coast route. Permanent arrangements for the extension of the route to Australia were now under consideration. The Empire services also showed an increase in the passenger traffic, 2,130 being carried during the first six months of the current year as against 2,050 in the whole of the preceding year.

## Air Mail for Southern China

THE Postmaster-General announces that air mail correspondence for Southern China may now be sent by air via Saigon in French Indo-China. The time of transmission is 13-17 days to Hong Kong and the air postage rate is 2s. per  $\frac{1}{2}$  oz. for letters, 8d. per  $\frac{1}{2}$  oz. for printed papers and 8d. for postcards. The latest time of posting in the air mail box outside the General Post Office, King Edward Street, London, E.C.1, is 6.30 a.m. on Wednesdays. The rate of 8d. per  $\frac{1}{2}$  oz. applies also to printed papers for French Indo-China.

## Air Services to Hong Kong

THE following statement regarding passenger and mail services to Hong Kong, issued by *Shell Aviation News*, no doubt has some bearing upon the above "P.M.G." notice. The statement says that the Air Orient are very shortly transferring the terminal base of their France-Indo-China mail service from Saigon to Hanoi, and extending the line to Canton and Hong Kong. In consequence, Bangkok and Saigon will no longer be on the main route, and this will in future pass through Pitsanuloke and Vientiane. The manner in which these two places will be connected with the trunk line has not yet been decided, but it is probable that shuttle service will be operated from Pitsanuloke to Saigon. The Aerial Transport Company of Siam plans to operate an air service in conjunction with the Far Eastern Aviation Company between Rangoon and Pitsanuloke, Hanoi and Hong Kong. Actually the Far

Eastern Aviation Company would function on the route Hanoi-Hong Kong whereas the Indo-China-Burmah sector would be flown by aircraft belonging to the Aerial Transport Company. It would seem as if there is likely to be some Anglo-French competition to obtain the bulk of the mail, and later on no doubt the passenger traffic, on this route, as well as whatever concession the Canton Government is prepared to offer towards subsidising the new line. There have been persistent rumours that the local Government is prepared to pay a sum of (Hong Kong) \$300,000 (approximately £20,000) over a period of five years, of which amount \$100,000 (£6,666) will be allotted for payment in the first year, the balance being divided equally over the remaining years. However, when questioned in the Legislative Council, the Colonial Secretary stated that while the Government is not prepared to institute air mail services, it remains ready to accord sympathetic consideration to any practical suggestions that may be put forward, but in the absence of concrete proposals the policy cannot be more closely defined. The Colonial Secretary further stated that by sympathetic consideration he meant that the Government contemplated the grant of financial assistance if an application for the maintenance of the service met with approval.

Regarding new aircraft for the Air Orient, the statement reports that this company had under consideration the purchase of three Fokker aircraft to be constructed in Holland, but as the result of an injunction from the French Minister of Air only one machine was bought, which was delivered and flown out at the beginning of September to Damascus by M. Winckler, chief pilot to the company. To take the place of the other Fokkers two Wibault 280 aircraft have been ordered. These machines are still under construction, and the choice of power unit that will be fitted has not yet been made. It is known that M. Balazuc, the managing director of the Air Orient, is very interested in the new Hispano-Suiza engine (Wright licence) type 9Qr, and if tests that are now under way prove satisfactory it is more than probable that the Air Orient will adopt this type of engine.

## Short "Kent" Flying-Boats Give Good Service

THE Short "Kent" flying-boats (four Bristol Jupiter X-FBM) *Scipio*, *Sylvanus* and *Satyrus*, that have been in Imperial Airways' service in the Mediterranean since May, 1931, had covered up to the end of August last 98,270, 90,565 and 77,484 miles respectively (a total of 266,319 miles) without suffering a single mechanical breakdown resulting in the interruption of the scheduled service. Imperial Airways state that the period of operation of the boats has been singularly trouble-free and what little attention they have required has easily been provided. These flying-boats have used exclusively Aero Shell lubricating oil and Shell aviation spirit. "Kent" flying-boats, it may be added, will in future be known as the "Scipio" type.



DE HAVILLAND AIRCRAFT IN AUSTRALIA: Some of the Q.A.N.T.A.S. company's fleet—(left to right) "Moth" (Cirrus III); "Moth" (Gipsy); "Puss Moth"; D.H.61 (Bristol Jupiter XI F); D.H.50 "Giant Moth" (450 Jupiter VI). (Photo. Shell-Mex and B.P.)



# Airport News

## CROYDON

**H**ERR W. POLTE, one of the three chief pilots of the Deutsche Luft Hansa, has been appointed to operate on the London to Berlin service. He has recently been flying the three-engined Junkers J.U.52 between Munich and Rome. A few days ago he made the trip from Rome via Vienna and Munich to Berlin, a distance of 1,300 km., or approximately 820 miles, in 5 hr. 35 min.; this included the time for landing and taking off.

Mrs. and Miss Mannix, wife and daughter of the director of Metro-Goldwyn Mayer, left Croydon on Thursday morning in the "Rohrbach" for Berlin, and proceeded from there to the well-known health resort, Baden Baden.

The repair section of the Cirrus-Hermes Engineering Co., Ltd., has certainly justified its existence since it started only a short time ago. Several crashed machines were brought in this week, and one or two that looked as if they were completely written off are now in the course of reconstruction.

Private owners of Cirrus or Hermes engined aircraft are finding a great advantage in bringing their machines here for a C. of A., as this can generally be obtained in less time than elsewhere, due not only to the fact that the necessary jigs and tools are at hand, also spare parts, but in addition the company has an A.I.D. officer on the premises, who attends solely to their business.

A valuable picture, the property of H.M. the King, arrived at Croydon on Tuesday evening from Paris, accom-

panied by Sir John Blundell. After the passengers had disembarked and the freight and mails had been unloaded, the machine was taxied into the hangar, where the picture was removed under the supervision of Sir John Blundell to a special van, which had been sent to collect it.

H.R.H. Prince George had an unusually long trip by air from Amsterdam on Thursday, due to exceptionally strong head winds encountered throughout the journey, which took nearly four hours.

Amongst the passengers to arrive at Croydon on Sunday was His Excellency the Chilean Ambassador, who is a frequent traveller by air and always has a word of praise for air travel.

Mr. Wright took delivery of his Bristol "Fighter" on Saturday from Rollason, Muir & Rickard, and during the week Mr. Robert T. Boyd, a pupil of the same school, passed several of his "B" licence tests.

Herr Pfennig, who was the station engineer of the Deutsche Luft Hansa at Croydon for a number of years on the old aerodrome, returned this week after an absence of nearly six years. Herr Pfennig has come for a few days' visit to carry out some special repair work. This is his first visit since he was recalled to Berlin in 1927, and he is very delighted to be here again.

A report that a steamship in the Channel on Saturday picked up a wireless distress signal from an aeroplane that had landed on the water has given rise to a certain amount of speculation with regard to the signal being a genuine one. The Air Ministry, I understand, and the Board of Trade have not so far been able to trace any missing machine.

The "Monospar" G-ABUZ returned from its Continental tour on Saturday, and Flt. Lt. H. M. Schofield had quite a lot to say about his travels.

The total number of passengers for the week was 1,633; freight, 59 tons 14 cwt.

HORATIUS.

## FROM HESTON

**O**N Monday, October 10, Air Taxis, Ltd., took one passenger to Jersey in a "Puss Moth." Herr Kirsch, with Maj. E. Stephen, arrived from Berlin in the latest three-seater cabin type of Klemm. Henlys, Ltd., took possession of their new office in front of the club-house. The Sikorsky (NC.11.V.) of Miss Margery Durant made a trip to Southampton and back, with a pilot and three passengers on board.

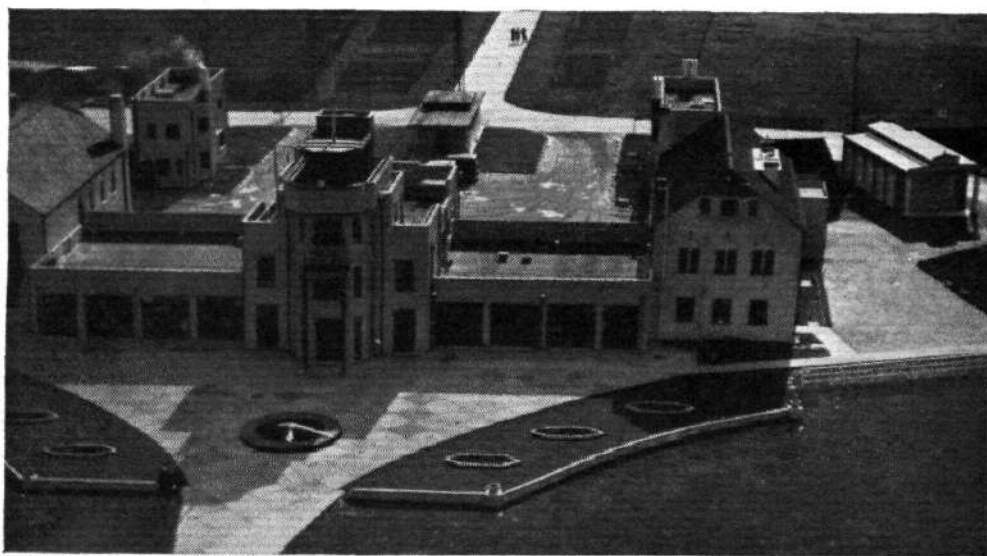
Wednesday, October 12, was not a very good flying day owing to fog. In spite of this, several machines arrived from abroad and left for destinations on the Continent. Two machines proceeded to Paris, one to Aachen, one to Rotterdam, two arrived from Paris, one from Amsterdam, one from Guernsey and one from Cologne. Among the machines clearing Customs for abroad was a D.H. "Moth," piloted by Mr. J. R. Hibert on the first stage of his solo flight to Australia. Mr. Hibert is treating this trip as a holiday, travelling by easy stages. He intends to ship his machine from Australia to Vancouver and then fly across Canada. He has not yet completed 100 hours' solo flying. Flt. Lt. Christopher Clarkson returned on a "Tiger Moth" from Lisbon, via Biarritz, where he had been giving a demonstration.

Friday, October 14, was again not very suitable for flying instruction, but instruction was carried out during the morning, one of the pupils taking a lesson on a "Puss Moth." Col. Strange left in the Spartan "Cruiser" (G-ABTY), with Mr. John Lord and Mr. Ballardie, for Paris en route for Bucharest, Belgrade, Athens, etc., where demonstrations of the machine had been asked for. Mr. Cliff left in the "Civilian Coupé" G-ABPW for Brussels and Berlin. "The Spider" of Banco, piloted by Capt. Barnard, left Heston this afternoon to take the directors of

the Plymouth Argyle team to Stoke the following morning. On Saturday morning, October 15, Heston presented a very bustling and animated scene with the preparations for the Heston-Cardiff air race. During the day one "Moth" left for Paris, one "Desoutter" arrived from Brussels, and one "Puss Moth" left for Brussels.

Sunday, October 16, opened by the first pupil of the day—a lady learning to fly as a surprise to her family—carrying out her first solo. Another pupil did his height test, which was all he required to qualify for his "A" licence.

"Puss Moth" G-ABZM left for Brussels at 7.20 a.m. with two passengers, piloted by Mr. Buckingham. Mr. Lindsay Everard's party, consisting of himself, Mr. Wilson Fox, Mr. Macpherson and Miss Winifred Spooner, arrived at Heston at 1.20 p.m., having flown from Dijon this morning, on the termination of their trip to Persia.



**AN AIRMAN'S CLOCK:** This unique clock, on the tarmac at Heston, has been designed to be easily visible from aeroplanes flying over the Airport. (FLIGHT Photo.)

# Airisms from the Four Winds

## By Air Yacht to the Mediterranean

MRS. J. J. JAMES, of Kenya Park, Rownhams (Southampton)—a keen motor-boat and flying enthusiast—has acquired the Supermarine "luxury air yacht" G-AASE, the 3-engined mono-flying-boat (Armstrong-Siddeley "Panther") previously owned by the Hon. A. E. Guinness. On October 11 the *Windward III*, as the air yacht is called, piloted by Capt. H. C. Biard, and with Mrs. James on board, left Southampton on a cruise "somewhere" around the Mediterranean and North Africa. Later, bad weather forced them down off Cherbourg, where the aeroplane was moored to await better conditions, but these became worse, and on October 14 the party, who had remained on board, were taken off by tugs from Cherbourg which had answered their calls for help. As soon as conditions, etc., improve it is hoped to continue the tour.

## Three New French Flights

THREE new flights by French pilots are reported by *Shell Aviation News*. Louis Couhe, Inspecteur de l'Aviation Civile in France, has under consideration a flight from Paris to Saigon in a Couzinet machine fitted with three 95-h.p. Salmson radial engines. He will be accompanied by M. Robyn, pilot to the B.P. Company in France. There is a possibility of the flight being extended to Hong Kong and Peking, but no definite route has yet been announced. M. Minguet is shortly leaving Paris for an official Government flight to Fort Lamy under the sponsorship of the French Ministry of Air. He will fly a Caudron "Phalène" machine fitted with a 135-h.p. Salmson engine, and will take the following route:—Oran, Colomb Bechar, Adrar, Reggan, Gao, Niamey, Zinder, Fort Lamy. M. Andre Maillet, manager and chief pilot of the Roland Garros Club, one of the largest and best-known light aeroplane clubs in Europe, is shortly leaving France for Abyssinia, also in a Caudron "Phalène" machine fitted with an inverted Gipsy engine. His route is provisionally fixed through Spain, to Algiers, thence via Tunis, Tripoli, Benghazi, Mersa Matruh, Cairo, Aswan, Wadi Halfa, Atbara, Massawa, Djibouti to Addis Ababa.

## Miss Durant in Europe

MISS MARGERY DURANT, who has previously made aerial tours in Europe and North Africa, is now in England with her Sikorsky NC-IIV amphibian (two 420-h.p. Pratt & Whitney Wasp) *Silver Wings* and pilot, Mr. Charles Lajotte, and is planning another extensive air tour of Europe. Miss Durant is the daughter of the managing director of General Motors Corp.

## Dublin to Berlin Service?

OUR Irish Correspondent informs us that on October 22 a flight by a Fokker monoplane, organised by Col. Charles F. Russell, one-time Commander of the Irish Free State Air Corps, will be made from Dublin to Berlin to demonstrate the possibilities of a regular service to the business community of Ireland. It is understood that the flight is

being made in co-operation with Royal Dutch Air Lines. The machine, it is stated, will be a 30-seater and in addition to passengers arrangements are being made with the Free State Department of Posts and Telegraphs to carry a limited quantity of mails. The aeroplane will leave Dublin in the morning and return on the following day; the return fare being £15. Subscriptions for the organising of the flight and the campaign for the promotion of aviation in Ireland have been received from many important business men in Dublin and the Association of Chambers of Commerce, Dublin, has expressed an interest in the project. Galway Harbour Commissioners have privately subscribed the sum of £80 for a "feeder" service to Dublin on the morning of the flight.

## A Polish Flight to Africa

CAPTAINS KRETONOWICZ and KALINA, two officers of the Polish Air Force are, reports *Shell Aviation News*, shortly leaving Warsaw on a flight to Madagascar and return in an R.W.D. VI machine fitted with a 140-h.p. Armstrong-Siddeley Genet engine. The outward flight will pass through Turkey, Egypt, East and Portuguese East Africa, while the return journey will be via Tanganyika, Italian and French Somaliland, Arabia, Palestine, Syria, Iraq, Syria, Turkey and Rumania.

## New French Centre for Private Owners

THE French company, Société Anonyme Française Aéronautique, more commonly known by the initials SAFA, is at present engaged upon establishing a new Paris aerodrome at Toussus-le-Noble (in the Seine et Oise department), intended primarily as a home for private owners of aircraft. This company, it may be remembered, holds the French licence for the manufacture of the Koolhoven F.K.43 four-seater with Hermes II engine, and will be exhibiting two of these machines, and a sectioned Hermes II, at the forthcoming Paris Aero Show. The company was formed towards the end of 1931, with a share capital of 2,250,000 francs, and sanction has now been obtained to increase the share capital to 4,250,000 francs. The new capital will be issued in the form of 20,000 shares of 100 francs each. The new aerodrome at Toussus-le-Noble will be provided with hangars, clubhouse, bar, bedrooms, tennis courts, a swimming pool, etc., and it is hoped to make it a centre for private owners and others interested in private flying. The aerodrome has an area of 60 hectares (148 acres) and runs of 800-1,000 yards are obtainable. The Paris address of SAFA is 2, Rue Paul Cézanne, Paris (8me.).

## 208 Squadron, R.A.F., Annual Reunion Dinner

THE Annual Reunion Dinner of No. 208 Squadron, R.A.F. (late No. 8 Naval Squadron), will be held on Saturday, November 5, at Carr's Restaurant, 264, Strand, London, W.C.2, at 6.30 p.m. Tickets, 6s. each (to be paid for during the evening). Morning dress. James Wyatt, Hon. Sec., 11, Park Village West, London, N.W.1.



"The LUXURY AIR YACHT": The Supermarine mono-flying-boat, *Windward III* (3 Armstrong-Siddeley "Panthers"), on which Mrs. J. J. James is making a Mediterranean cruise, piloted by Capt. H. C. Biard.



# Air-Race Handicapping

An Allowance for Wind when the Course is a Closed Circuit

By J. L. HUTCHINSON, A.F.R.Ae.S.

Mr. Hutchinson, who is Scientific Officer at the Aero-plane and Armament Experimental Establishment at Martlesham Heath, submitted the following article to us many months ago. Until now there has been no suitable opportunity to publish it, but as the question of handicapping is always important in air racing, we have thought it of interest to put on record Mr. Hutchinson's method of dealing with the effect of wind.

The larger question, i.e., whether we should race to a formula or continue the present system of handicapping "on form," is not dealt with in the article. If, however, handicap racing is to be continued, it is essential that account should be taken of the wind blowing on the day or days of the race. Mr. Hutchinson indicates one fairly simple way in which this can be done.

THE first step in handicapping machines in an air race is to assign to each a rated top speed. This can be done either from a formula, or from the published performance of the type. The latter is preferable, because the former always favours one class of aircraft at the expense of the rest.

Fair time allowances, however, cannot be awarded without taking into account the wind. Otherwise, the fast machines would have an unfair advantage over the slow, which are much more easily blown out of their courses. In a prolonged contest like the King's Cup Race, over a considerable tract of country and taking the best part of two days to complete, it is not possible to make any but a rough allowance for weather conditions which are likely to vary considerably over the course. But in a short, local competition, where conditions can reasonably be taken as constant, it is necessary to make a rapid calculation of the wind effect an hour or so before the race, when it is seen what the strength and direction of the wind is likely to be. The only way to do this with any accuracy is to prepare a number of charts beforehand for a series of wind speeds and directions, and interpolate for the conditions which are found to prevail on the actual day.

Given the course, the estimation of the time over it for a particular machine speed, and a given wind, can be an extremely laborious process, but below is obtained a simple expression in the case of a closed circuit; the fact that the machines return to the starting point introducing a simplifying condition.

For the sake of simplicity, we suppose that the course is composed of straight sides, i.e., is polygonal, though the proof applies equally well to any shape.

Consider the time over a side PQ for a machine of rated speed  $m$  in a wind of speed  $w$ , making an angle  $\theta$  with PQ.

In order to make a ground course PQ the pilot must fly in a direction PS at an air speed  $m$ , so that the ground speed  $u$  is given by the equation connecting the sides of the triangle PQR.

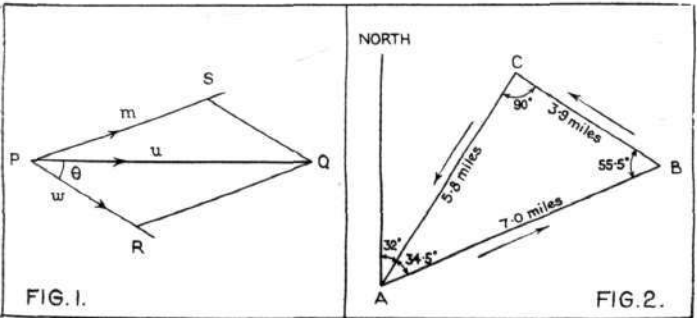
$$RQ^2 = PQ^2 + PR^2 - 2 PQ \cdot PR \cos \theta.$$

or

$$m^2 = u^2 + w^2 - 2uw \cos \theta.$$

This is a quadratic in  $u$  which gives

$$u = w \cos \theta + \sqrt{m^2 - w^2 (1 - \cos^2 \theta)}$$



The time required is therefore

$$\begin{aligned} \frac{PQ}{u} &= \frac{PQ}{w \cos \theta + \sqrt{m^2 - w^2 (1 - \cos^2 \theta)}} \\ &= PQ \cdot \frac{\sqrt{m^2 - w^2 (1 - \cos^2 \theta)} - w \cos \theta}{m^2 - w^2}, \end{aligned}$$

and the total time round the complete course is

$$\frac{1}{m^2 - w^2} \Sigma PQ \sqrt{m^2 - w^2 (1 - \cos^2 \theta)} - \frac{w}{m^2 - w^2} \Sigma PQ \cos \theta.$$

If now the circuit is complete, the second term disappears, since  $\Sigma PQ \cos \theta$  is simply the algebraic sum of the projections of the sides of the polygon along the wind direction.

In the first term we can expand  $\sqrt{m^2 - w^2 (1 - \cos^2 \theta)}$  by the binomial theorem and express it with good accuracy as

$$m - \frac{1}{2} \frac{w^2}{m} (1 - \cos^2 \theta)$$

since  $\left(\frac{w}{m}\right)^2$  is small except under climatic conditions which would make the race impossible.

Hence

$$\begin{aligned} \text{Total time} &= \Sigma PQ \cdot \frac{2m^2 - w^2 (1 - \cos^2 \theta)}{2m (m^2 - w^2)} \\ &= \frac{2m^2 - w^2}{2m (m^2 - w^2)} \Sigma PQ + \frac{w^2}{2m (m^2 - w^2)} \Sigma PQ \cos^2 \theta. \end{aligned}$$

$\Sigma PQ$  is the total length of the course. The corresponding expression for any closed contour C of length  $d$  is simply

$$t = \frac{2m^2 - w^2}{2m (m^2 - w^2)} d + \frac{w^2}{2m (m^2 - w^2)} \int_C \cos^2 \theta ds,$$

where  $\theta$  is the instantaneous angle between the wind and the element,  $ds$  of the ground course at any point. The

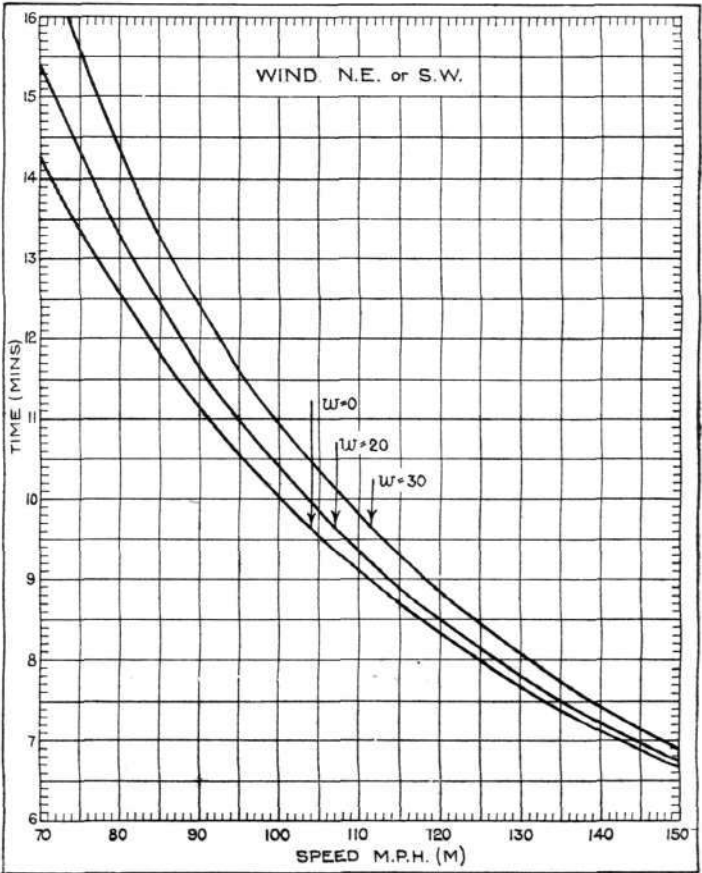


FIG. 3.

second term is a line integral taken completely round the circuit.

The form of the expression shows that the time is independent of the direction in which the pilot flies round the course, and is dependent upon the direction, but not upon the sense of the wind (since  $\cos \theta$  occurs only to an even power); conclusions which can, of course, be deduced from purely physical considerations.

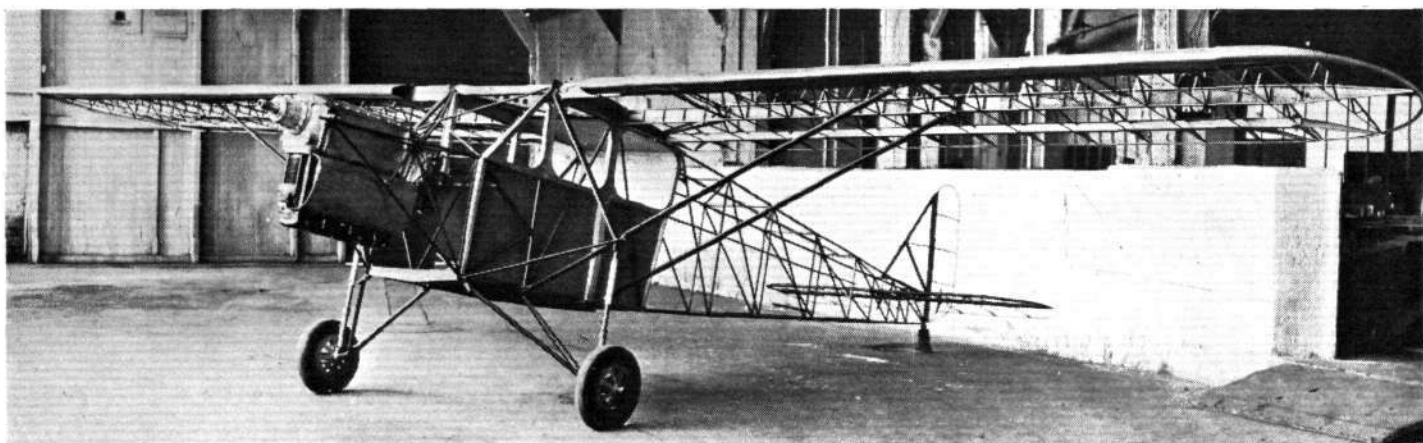
The first term which involves the speed, but not the direction of the wind or the shape of the circuit, is the more important, and can be very quickly computed. The second, involving the wind speed and direction, and also the shape of the course, is usually negligible for winds under 10 m.p.h. For stronger winds it must be considered.

This method was used successfully in a cross-country race around a triangular course of 16.7 miles, shown in Fig. 2.

From the lengths and directions of the sides of the triangle, the various terms of the expression for the time were calculated for a range of machine speeds and winds of 0, 20, 30 m.p.h. from (1) north or south; (2) east or west; (3) north-east or south-west; (4) north-west or south-east.

An hour before the race the prevailing wind was blowing from the north-east at 12 m.p.h., and accordingly the total times were estimated from the chart reproduced in Fig. 3. Subtraction of these from the time of the slowest "scratch" machine gave the intervals from scratch at which each machine must be started. The result was very close, the first five competitors finishing in a bunch.

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THE MARCEL BLOCH 90 : The engine is a de Havilland Gipsy III.

## A FRENCH ALL-METAL LIGHT PLANE

THE French Marcel Bloch aircraft works have recently built a new all-metal light plane, the type Marcel Bloch 90. It is a high-wing monoplane, somewhat resembling the "Puss Moth."

The construction is interesting as marking the first time an all-metal light plane has been built in France.

The wing is composed of two halves, and is of rectangular plan form with rounded ends. The wing section is constant over the entire span.

The wing structure is composed of two duralumin wing spars of I section, stiffened by double duralumin tube stays and cross-braced by steel wire. The ribs are also made in duralumin. The entire wing structure is covered with fabric. The wing is braced to the fuselage by two steel tube struts on each side.

The fuselage, of rectangular cross section, is composed of a welded steel tube framework. The stays, also composed of steel tube, are arranged diagonally. The fuselage has a cabin with two seats side by side, and is covered with fabric. The sides and floor of the cabin are covered with plywood.

All the tail surfaces are made of steel tube and duralumin, and covered with fabric. They are not balanced.

The undercarriage has a wide tread. It is composed of two cranked half-axes hinged to the fuselage and fitted with oleo-hydraulic shock absorbers. The two wheels are provided with brakes.

This aircraft is fitted with the 120 h.p. "Gipsy III" engine, carried on a welded steel tube framework.

Two petrol tanks, with a total capacity of 120 litres, are placed in the two wing-halves, while an auxiliary petrol tank of 50 litres can be placed in the fuselage.

Span, 7 m. (23 ft.); wing area, 13 m.<sup>2</sup> (140 sq. ft.); weight empty, 320 kg. (705 lb.); useful load, 300 kg. (661 lb.); weight fully load, 620 kg. (1,366 lb.); wing loading, 47.7 kg./m.<sup>2</sup> (9.78 lb./sq. ft.); power loading, 5.17 kg./h.p. (11.5 lb./h.p.); maximum speed, 210 km./h. (130.5 m.p.h.); cruising speed, 180 km./h. (112 m.p.h.); landing speed, 80 km./h. (50 m.p.h.); climb to 1,000 m., 4 min.; ceiling, 6,000 m. (19,685 ft.); normal range, 800 km. (500 miles).

This aircraft was built for participating in the International Touring Competition, but could not start as it was not finished in time. Now the machine has made its first trial flights.

F. W.

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### "Travel in the Air"

THE Wayfarers' Travel Agency, Ltd., will be holding a Public Luncheon on Thursday, October 27, at the Criterion Restaurant (Jermyn Street entrance), London, at 12.45 p.m. for 1 p.m. with the object of stimulating air travel. Col. the Master of Sempill will be in the chair, the Guests of Honour being Mr. and Mrs. J. A. Mollison, and the subject under discussion will be "Travel in the Air." Tickets, price 4s. 6d., may be obtained from The Wayfarers' Travel Agency, Ltd., 33, Gordon Square, London, W.C.1.

### Flying Conditions on the West Coast of Africa

On Thursday, October 20, 1932, Flt. Lt. W. G. Pudney will deliver a lecture on "Flying Conditions on the West Coast of Africa." Flt. Lt. Pudney made, in 1931, a survey flight of the West Coast of Africa with the definite object of studying the possible development of new air lines. The lecture is very detailed of the conditions to be found on the West African coast from Tangiers

to Cape Town, and will be illustrated with a large number of photographs taken on the flight. Landing places, sea-plane bases, meteorological conditions, communications generally and the like are fully dealt with in his account of a very remarkable survey flight. The lecture throws a new light on West African conditions. The chair will be taken by Air Marshal Sir Robert Brooke-Popham, K.C.B., C.M.G., D.S.O., A.F.C., F.R.Ae.S., Vice-President of the Society. The lecture will be at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, at 6.30 p.m. Flt. Lt. Pudney, who is now instructor at the Berks, Bucks and Oxon Aeroplane Club at Reading, joined the New Zealand Expeditionary Force on August 4, 1914, and was at the landing in Gallipoli. He joined the R.F.C. in 1916 and fought on the Western Front. For some time he was a test pilot at Martlesham Heath, and later was loaned to the Royal Canadian Air Force as a test pilot. Non-members will be welcome, but must sign the Visitors' Book in the entrance hall.



# Aircraft Engineering Training

(Continued from page 970)

**T**HIS week we continue the article, which was started in last week's issue, giving information for those who wish to enter aircraft works or flying schools as apprentices and those who may desire to partake of training which will enable them to pass the examinations for the various categories of ground engineer's licence. It should be pointed out that the information contained in this article is not binding in any way

but is merely designed to serve as a guide to the facilities to be found at each individual manufacturer. Moreover, in the majority of cases it is as well to warn prospective applicants that most of the manufacturers already have a long waiting list and that there is very little hope in most cases of boys being taken on at once. Having decided where they wish to go they must make their application and then take their line in the queue, so to speak.

## BLACKBURNS

The Blackburn Aeroplane & Motor Co., Ltd., Brough, E. Yorkshire

BLACKBURN aircraft are extremely well known all the world over for their sturdy construction and the general utility of their Service types. Their machines have been used in the Fleet Air Arm for a very long time, and both their seaplanes and flying boats are in use for coastal defence. They are nowadays naturally of metal construction, and their light aeroplane, the "Bluebird," a side-by-side two-seater, is one of the very few light civil machines to have all-metal, fabric-covered wings. The successor to the "Bluebird" is the "B.2 Trainer," and here a further step has been taken by fabricating the whole fuselage, including the covering, from duralumin. This trainer is an excellent aircraft, and many of the smaller foreign countries are taking a very great interest in it. They also have other large civil aircraft which have been built to the order of the Air Ministry.

The firm has recently entered into a training scheme agreement with the University College of Hull and the Hull Municipal Technical College. This scheme entails a course of four years nine months. The first two years of this period are spent in the firm's workshops and during this time the students are required to attend evening classes at the Hull Municipal Technical College, where they are expected to take the national certificate of the Institute of Mechanical Engineering, qualifying them to take the course of aeronautics at the University. The following two years are then spent in studying aeronautics, mathematics, and physics, at the University and work in the engineering and other departments of the Technical College. At the end of this time the students should be able to qualify for the University Diploma in aeronautics. The last nine months are then spent in the firm's drawing office. Works' apprentices are also taken and these spend most of their time in the fitting shop or the repair shops, but no particular scheme of training for Ground Engineers' licences is in operation.

## ROLLS ROYCE

Rolls Royce Ltd., Derby

ROLLS-ROYCE aircraft engines are now too well known to need description; suffice it to say that they are standardised in the R.A.F., and used for many of the fastest aircraft in the world. It was, of course, the Rolls-Royce "R" type engine which enabled us finally to win the Schneider Trophy with the Supermarine S.6B.

The firm occasionally has vacancies for premium apprentices who are taught the manufacture of motor car chassis and aero engines. Their course is for four years and it is advised that youths should commence before they are older than 17 years of age. The course is entirely practical and consists of experience in all the various workshops. Facilities are also available for obtaining theoretical training at the local technical college, the expense of which has to be borne by the apprentice. At the present time the works have their full complement of apprentices and there is a long waiting list. It is advisable therefore that application should be made to the company some time before intending apprentices reach 17 years of age, so that vacancies may be reserved.

## A.S.T.

Air Service Training, Ltd., Hamble, Southampton

THIS company is, as our readers know, primarily a flying training establishment, and for that reason few, if any, pupils are taken for training for ground engineers' licences, who are not at the same time taking a course of flying. The school has already been fully described in our pages, so that it will suffice to remind readers that few such establishments in the world are better equipped to give thorough instruction in all branches of flying, using both land and seaplanes. Occasionally, exceptions are made where for some special reason the pupil does not wish to take a course of flying, and under these circumstances there is a two years' course for the "A," "C" and "X" licence, the latter being for the care and maintenance of parachutes and care and adjustment of compasses. The fee charged for this course is £200.

## REDWING

Redwing Aircraft Co., Ltd., Gatwick Aerodrome, Surrey

THE REDWING AIRCRAFT Co. is a company formed for the manufacture of commercial aircraft of the type which appeals to the private owner. The "Redwing," as their machine is called, is a fairly lightly-loaded side-by-side two-seater biplane with an Armstrong-Siddeley "Genet" engine. This machine is particularly easy to fly, and is already in use at a number of flying clubs. It is of fairly orthodox construction, with a boxed plywood fuselage and fabric-covered surfaces built up with spruce spars and ribs. It is a straightforward job which lands very slowly indeed and is very comfortable to fly in all weathers. The company has a factory at Colchester aerodrome, but their main operations are carried on at Gatwick, where they have their school of flying and aeronautical engineering.

They have a comprehensive scheme of courses laid out which includes those suitable for persons wishing to learn to fly, as well as those who merely wish to take their ground engineer's licence. There is the two years students' course, including 120 hours flying, for which the total fees payable at £20 per month are £480; one year's students' course, with 60 hours flying, costing £240, payable at the same rate as above; the course for pilot's "B" licence, including 120 hours flying, costing £300; the course for pilot's "A" licence, with 60 hours flying, costing £175, or with only 14 to 15 hours flying, £45; and a ground engineers' course, which costs £8 per month. The extended students' courses include practical workshop training, covering maintenance of aircraft and inspection; processes of manufacture; theoretical training in aeronautics, mathematics and design; drawing office practice; aerodrome management; and of course flying training. Those wishing for further information about this school should apply to the Secretary of the company at the above address.

## GENERAL AIRCRAFT

General Aircraft, Ltd., Airport of London, Croydon

GENERAL AIRCRAFT are noteworthy as the firm which has developed the "Monospar" system of wing construction. Their works at Croydon are now laid out for the production of a very interesting four-seater cabin machine having two Pobjoy engines. Several of these machines have already been delivered, and are giving very great satisfaction in the hands of both private and commercial users. They are, of course, extremely up to date and built of metal throughout. At the present moment production is not very large, but is increasing rapidly, and as soon as the full benefit of the preliminary organisation takes force, it is expected that a steady flow of these machines will be forthcoming. The "Monospar" method of construction is particularly interesting, and experience gained with this form should stand lads in very good stead if they at any time take up positions with other firms.

Apprentices are accepted by the company under a premium of £50 for a twelve months' course of instruction, which includes practical instruction in metal bending, rolling, general assembly, tool fitting construction, engine maintenance, etc. At the conclusion of these twelve months the company undertakes, subject to the conduct of the apprentices being satisfactory, to start them as improver apprentices at not less than 9d. per hour. Arrangements are being made for apprentices to have facility for theoretical instruction in general aircraft practice at one of the aeronautical colleges wherein they will be encouraged to take such instruction at their own cost.

## NORTHERN AIR LINES

Northern Air Lines Ltd., Airport of Manchester, Lancs.

THIS company is that which operates the airport at Manchester, and they do quite an extensive business in flying training, taxi work and joyriding. Their engine and aircraft repair and overhaul workshops are well fitted, admirably organised and suitable in every way for teaching pupils all about the care and maintenance of aircraft.

They have a definite system of instruction and sometimes have vacancies for young men to enter their workshops with a view to obtaining Ground Engineers' Licences. Agreements for these are usually made with their manager as an individual arrangement.

## SHORTS

Short Bros. (Rochester &amp; Bedford), Ltd., Rochester

SHORT BROS. are one of the best known firms in the world for the construction of flying-boats and particularly for their pioneer work in the use of stainless steel for the hulls of flying-boats. The boats produced by them include those used for both military and civil purposes and generally follow the lines of a particularly seaworthy metal hull surmounted by a biplane structure, between the wings of which the engines are mounted. One of their latest, the "Scipio" class with four Jupiter engines is of this type and is doing excellent and regular work in the hands of Imperial Airways on the Indian and South African routes. Shorts, it will of course be remembered, were one of the pioneers of seaplane construction, and their 125 and 225 Sunbeam-engined seaplanes were perhaps more widely used for patrol purposes round our coasts during the Great War than any other aircraft. Apart from the actual construction of flying-boats and seaplanes they also specialise in all-metal seaplane floats which have been fitted to seaplanes built by many makers. They have their own model tank for testing model hulls and floats, and it is no doubt largely due to the use of this that they have been able to develop such seaworthy hulls and excellent floats.

Lads entering their employ as apprentices are given a minimum wage of 5s. per week, and then, if after a probationary period of from three to six months, they are considered suitable, indentures are signed. The period of apprenticeship is from three to five years, and the pay varies from the starting minimum of 5s. per week to 15s. per week in the fifth year. Added to this scale, there is a bonus of 2s. 6d. per week for boys under 18, and 5s. per week over this age. Advancement in the works during this period of apprenticeship is, of course, entirely by merit. Boys who wish to enter the drawing office for training as draughtsmen, usually do so in the capacity of office boy and if, after a certain period, suitable promise is shown, they are promoted to a drawing board. Occasionally, where the boy is above the average ability, he is brought in straight to the drawing board. Boys entering

for general office duties at the age of 14 are paid approximately 7s. 6d. per week until they are 16 years old. They are then, if considered suitable, promoted to a drawing board at a salary commencing at 10s. and rising to 30s. per week in their fifth year. At the present moment no vacancies are available in either category.

## AVRO

A. V. Roe &amp; Co., Ltd., Newton Heath, Manchester

A. V. ROE is one of the pioneer firms of aircraft construction, and their 504K is probably better known than any other training aircraft in the world. Of recent years they have turned to metal construction for Service aircraft, and their Avro Trainer has recently been standardised as the training aircraft for the R.A.F. In commercial aircraft they are well known for their "Avian" light aircraft, which is built both as a wooden machine and also as a metal machine, having a welded steel-tube fuselage. In the larger sizes, they have acquired the licence for the construction of "Fokker" type machines, and under this licence have produced the "Avro VI" and "Avro X," both of which have welded steel fuselages and built-up plywood wings.

The waiting list of applicants who wish to enter their works as apprentices is very long indeed, and there is no likelihood of there being any vacancies for some time. They take boys of between 14 and 16 years of age, who start with a month in the drawing office; after that they are transferred to the works, where they gradually work through every single department, moving at fixed periods under a carefully laid-out scheme, so that they gain a very thorough knowledge of every phase of aircraft manufacture. After mastering every class of machine-tool fitting, jig making, manufacture of aircraft parts, welding assembly and erection rigging, jig and tool design, they then finish their last year in the drawing office. During all this time they have to attend technical school one full day per week, plus night classes. There is also a two years' course at the local technical school, which covers all requirements for the ground engineers' licences, so that the apprentices can go through this, in addition, and obtain their licences at the end of two years.

(To be continued)



### Commands in the Royal Air Force : Changes in the Higher Command

THE Air Ministry announces the following appointments:—

Air Marshal Sir Robert Brooke-Popham, K.C.B., C.M.G., D.S.O., A.F.C., now Commandant of the Imperial Defence College, to be Air Officer Commanding-in-Chief, Air Defence of Great Britain, with effect from a date on or about April 1, 1933, vice Air Marshal Sir W. Geoffrey H. Salmond, K.C.B., K.C.M.G., D.S.O., on the latter taking up his appointment of Chief of the Air Staff.

Air Vice-Marshal A. M. Longmore, C.B., D.S.O., now Air Officer Commanding, Royal Air Force, Cranwell, and Commandant of the Royal Air Force College, to be Air Officer Commanding, Inland Area, Royal Air Force, with effect from a date on or about February 1, 1933, vice Air Vice-Marshal A. E. Borton, C.B., C.M.G., D.S.O., A.F.C., on the latter completing his period of appointment.

Air Commodore W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C., now Director of Training at the Air Ministry, to be Commandant of the Royal Air Force College, Cranwell, with effect from a date on or about February 1, 1933, vice Air Vice-Marshal A. M. Longmore, C.B., D.S.O.

Air Commodore C. L. Courtney, C.B., C.B.E., now Senior Air Staff Officer, Iraq Command, to be Director of Training at the Air Ministry, with effect from a date on or about February 1, 1933, vice Air Commodore W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C.

Air Marshal Sir Robert Brooke-Popham was one of the four squadron commanders who took their units across to France on the outbreak of war in August, 1914. His command was No. 3 Squadron, which is now No. 3 (Fighter) Squadron of the Royal Air Force. He was one of the first commanders to make his squadron practise air photography, and in September, 1914, during the battle of the Aisne, this squadron managed to get some photographs of enemy trenches. As photographs these earliest efforts were not very successful, but it was the beginning of a great organisation.

Sir Robert was originally an officer in the Oxfordshire and Bucks Light Infantry. In 1911 he learnt to fly, his R.Ae.C. certificate being numbered 108, and dated July, 18, 1911. Next year he was seconded to the Royal Flying Corps and served in France from August, 1914, with short intervals until the end of the war. He was appointed in command of a wing in February, 1915, and was subsequently employed on staff duties at Royal Flying Corps Headquarters. After the war he became Director of Research at the Air Ministry until November, 1921, when he was appointed the first commandant of the then newly-constituted Royal Air Force Staff College, which post he held until May, 1926, when he became Air Officer Commanding, Fighting Area. He was appointed Air Officer Commanding, Iraq Command, in November, 1928, and took up his present post in January, 1931, when he was promoted to the rank of Air Marshal. While in Iraq he played a prominent part in arranging for the friendly meeting which took place between the two old enemies, King Feisal of Iraq and Ibn Saud of the Yemen. For his services during the war he was awarded the D.S.O. and the A.F.C. In

addition, he was mentioned in despatches on four occasions and had foreign orders bestowed on him. He also received the awards of C.M.G. in January, 1919, C.B. in June, 1919, and K.C.B. in June, 1927.

Air Vice-Marshal Longmore will always be remembered as one of the four Naval officers who were selected by the Admiralty to be taught flying at Eastchurch in response to Sir Francis McClean's generous offer. He had entered the Navy in 1904. In 1912 he was appointed Squadron Commander in the Royal Naval Air Service. During the war he served with the Royal Navy and the Royal Naval Air Service in France from 1914-1916, and after six months' reversion to sea service he re-joined the Royal Naval Air Service. After the war he proceeded to Bulgaria as President of the Inter-Allied Aeronautical Commission of Control, and in 1925 he was appointed Director of Equipment at the Air Ministry; he was then posted to Headquarters, Inland Area, as Chief Staff Officer and in 1929 became Air Officer Commanding, Royal Air Force, Cranwell, and Commandant of the Royal Air Force College. He was promoted to his present rank in January, 1930. For his services during the war he was awarded the D.S.O. and was mentioned in despatches besides having several foreign orders bestowed upon him. He was appointed C.B. in the New Year's Honours List of 1925.

Air Commodore C. L. Courtney entered the Royal Navy in 1909 as a Sub-Lieutenant and subsequently served with the Royal Naval Air Service and Royal Air Force in Belgium and France during the Great War. Later he became Deputy Director of Equipment at the Air Ministry and also served with the Royal Air Force in India and as an instructor at the Royal Air Force Staff College. He was promoted Group Captain in January, 1925, and in January, 1929, was appointed Deputy Director of Operations and Intelligence at the Air Ministry, which post he held until he was posted to the Iraq Command as Senior Air Staff Officer in December, 1930. He was promoted to his present rank in January, 1931. For his services during the war he was awarded the D.S.O. and C.B.E., and received a mention in despatches besides having foreign orders bestowed on him. In May of this year he received the award of C.B. in connection with the operations in Southern Kurdistan, during the period October, 1930, to May, 1931.

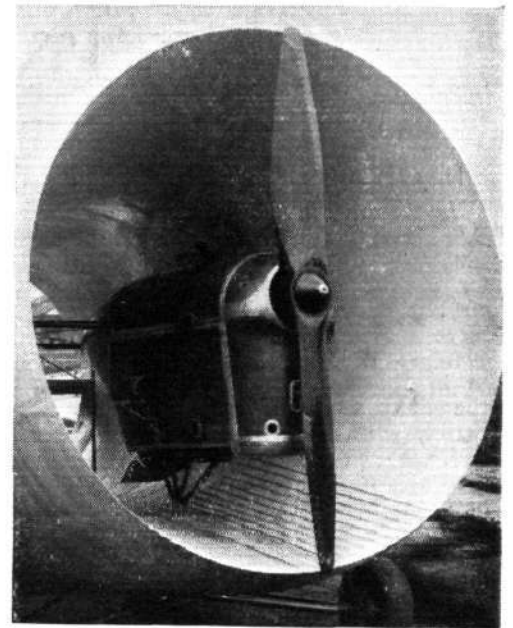
Air Commodore W. G. S. Mitchell entered the Army in 1906 as a 2nd Lieutenant, and was seconded to the Royal Flying Corps in December, 1913. He served in France from August, 1914, with short intervals until June, 1918. In December, 1919, he was posted to India, and on his return commanded the School of Technical Training, Halton, from January, 1925, to February, 1928. He then proceeded overseas to take charge of the Aden Command, which post he relinquished on appointment as Director of Training at the Air Ministry. He was promoted to his present rank in July, 1929. For his services during the war he was awarded the D.S.O., M.C., and the A.F.C., and was mentioned in despatches on four occasions. He also received the award of C.B.E. in 1924 for valuable services rendered in the field in connection with military operations in Waziristan, 1922 to 1923.

### Klemms to be built in England

MAJ. E. F. STEPHEN, of 141, New Bond Street, informs us that he has now secured the sole manufacturing and selling rights of Klemm aeroplanes for Great Britain and Ireland. He hopes to start production before very long. He will in all probability be producing not only the open two-seater model but also the closed three- and four-seater machines. All these will be fitted with English engines. This is very good news, as there is no doubt the Klemm with the Pobjoy engine is just the sort of aeroplane wanted by a very large number of private owners. The amazing performances which have been put up by Mr. A. B. Gibbons in a machine of this type have shown that its characteristics make it an admirable machine in every respect for touring about this country.



# A FLYING VENTURI TUBE



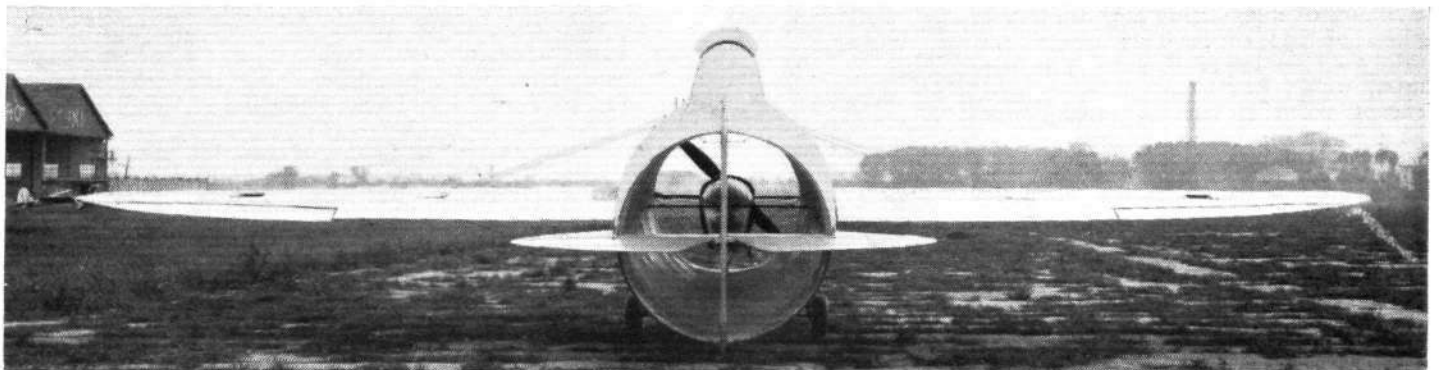
**D**ESIGNED by Signor Stipa, one of the Caproni designers, and built by the Caproni Works at Milan, Italy, the machine shown in the photographs may best be described as a flying Venturi tube, its fuselage being physically and aerodynamically a counterpart, on a large scale, of this instrument. Structurally the Stipa-Caproni is a machine of straightforward all-wood construction, the Venturi-tube fuselage being in the form of a light open drum, with inner and outer surfaces covered with plywood, attached to an inner skeleton. The monoplane wing is of thin section and wire braced to the fuselage, and the undercarriage is of normal type. The tail organs are attached directly to the rear edges of the Venturi, where they are almost entirely in the slipstream from the airscrew. The engine, of 120 h.p., is mounted on a steel-tube framework inside the Venturi, and drives a tractor airscrew so placed that its tips just clear the forward edges of the Venturi. The occupants are attached, somewhat after the fashion of barnacles, to the top of the Venturi. Here they are out of the slipstream, get a very good view, and are well away from

Mother Earth unless the machine should turn right over.

The reasons which led Signor Stipa to design this weird beast are slightly obscure, but it is believed that he expects low drag, extra stability and very effective rudder and elevator control, while tail flutter and "buffeting" should certainly not take place. One serious snag seems to be that small boys can (and probably will) very easily "stow away" inside the Venturi without the pilot knowing it. They would have a slightly uncomfortable time, but then what boy minds that?

Actually it is thought that Signor Stipa regards this machine as a flying model of much larger aircraft. He points out that airscrew diameter increases, for the same revolutions, as the fifth root of the power, and that therefore in large machines the Venturi tubes would be proportionally much smaller, and could be housed, in a multi-engined machine, inside a thick cantilever wing.

The experimental machine has a span of 13.3 m. (46.9 ft.), a wing area of 19 m.<sup>2</sup> (204.5 sq. ft.), a tare weight of 600 kg. (1,323 lb.) and a gross weight of 800 kg. (1,763 lb.). No performance figures are available.



## Singapore Civil Aerodrome

ACCORDING to *Shell Aviation News*, a site has now definitely been chosen for a civil aerodrome at Singapore, and it is expected that all the necessary work will be completed by 1935. Until that time civil aircraft will continue to be allowed by the Royal Air Force to use their base at Seletar. The site chosen is the Kallang Basin, and it will involve the reclamation of an area of swampy land which has always been a breeding place of disease in Singapore. The total area which is to be reclaimed is 339 acres. The Geyland River, which is to be canalised, will divide this area into two parts, the larger of which, containing 250 acres, will form the aerodrome. An anchorage for seaplanes is to be provided at the western end of the aerodrome, and there will be full facilities for dealing with sea-going aircraft in the way of slipways, wharves, cranes, etc. The water frontage of the aerodrome will amount to 8,078 ft. The total cost of the

whole scheme is estimated at Straits dollars 6,250,000 (approximately £730,000), but the whole of this cannot reasonably be laid against the provision of the aerodrome, as the clearing up of this most unhealthy area was anyhow a necessity, and, apart from the gain to aviation, the improvement of the sanitary conditions in the district will be considerable. Civil aviation has now for a long time been indebted to the R.A.F. for permission to make use of the Seletar base, and it is satisfactory to know that the authorities in Singapore are awake to their responsibilities in providing proper accommodation for civil aircraft flying from the west to the Dutch East Indies and Australia.

## R.A.F. Station, Manston

THE administration of the R.A.F. Station, Manston, was transferred from Headquarters, No. 23 Group, to Headquarters, No. 22 Group, with effect from October 1, 1932.

# The Industry

## HAYTHORPE INSPECTION LAMP

WE have received for inspection the Haythorpe Inspection Lamp, as illustrated on this page. It is designed for the inspection of the interiors of aircraft and cars, and, indeed, it can serve for illumination purposes wherever it is necessary to carry light, such as in the house. The container for the lamp is an aluminium case or barrel, with a detachable cap at each end. When the lamp is not being used the cup-shaped cap, fitted at the bottom, holds the coiled-up flex in position.

Incidentally, the makers of the lamp intend this cap to serve other useful purposes when the lamp is being employed on a job of inspection. It could, for example, hold a little petrol if the Autovac runs dry when one is working on a car. In the interior of the lamp barrel, at the base of the lamp holder, is a reflector. The inside of the barrel is highly polished and serves to concentrate the rays into a direct beam.

The top cap is a flat disc which protects the lamp when the latter is not in use, but, although when in position it is securely held by the arms of the nickel-steel stand, one is afraid that, as it has to be completely detached for obtaining illumination, with a propensity for rolling swiftly away out of sight, it would soon become a nuisance in a crowded workshop and finally be dispensed with altogether. This would then expose the lamp to the danger of breakage. Mr. Haythorpe, the designer of the lamp, has realised this, and he is thinking of introducing a wire mesh in place of the cap. This would certainly be an improvement. The wire mesh would not have to be removed except when it became necessary to fit a new lamp. The nickel-steel stand already referred to is a good feature. It clasps the barrel tightly when out of action, so that it is not a nuisance when the lamp is being used in the hand. When released it forms a good support for the lamp, which also

pivots on it and can therefore be altered to a different angle.

The lamp we have for our inspection is suitable for voltages up to 250, but the lamp can be produced to meet other voltages. We understand that another type, but one following the same design, is under consideration for aircraft purposes, made of galvanised steel.

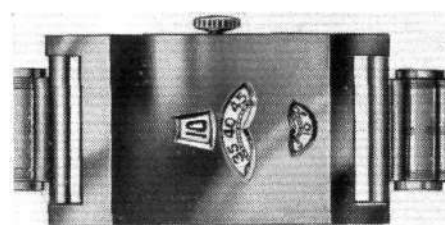
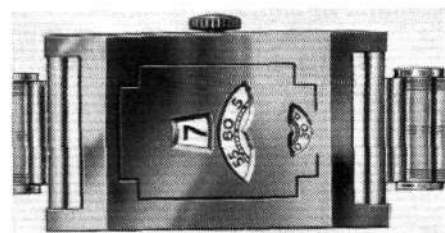
All communications about the Haythorpe lamp should be addressed to the London & Provincial Aviation Co., 3, Thackeray Street, Kensington Square, W.8. (Telephone: Western 4354 and 4355.)

## PRACTICAL WATCHES

"BUILT with the accuracy of aircraft instruments" is certainly an acceptable testimonial for a watch when it is justified. Obviously there is a tendency amongst up-to-date watchmakers to apply the standard of accuracy combined with strength in aircraft instruments as a new standard for watches.

The "Schneider" wristlet watches produced by Roberts & Co., Albion House, 59/61, New Oxford Street, W.C.1, have the recommendation of having been worn by Schneider Trophy pilots. The behaviour of these watches in high-speed flying testifies to their excellence.

There are several types to choose from, but all are fitted with 15-Ruby Jewelled Lever Movements and carry a two-years' guarantee. The "Schneider" Rotator wristlet watch embodies the modern style whereby the open-glass face is superseded by the protective enclosed case with slots for the separate reading of the hour, minute and second markings. These, incidentally, are much easier to read than some we have seen. The action of the "clock" faces is one of instantaneous jumping into position. The circular movements of the faces do away, of course, with the necessity of visible hands. One can wear such a wristlet watch without the caution necessary with a breakable open glass.



Luminous dials are supplied for the "Schneider" types at slightly extra cost.

## ENGINE SERVICE AT HESTON

MR. E. B. GRAHAM, Service Manager and later Assistant Chief Engineer to Specialloid, Ltd., has been transferred to Airwork Engine Service, Ltd., at Heston Airport, where he has taken up an appointment as General Manager, and where he will continue his activities in connection with the promoting of sales of Specialloid Pistons.

We feel sure Mr. Graham's many friends in the trade will wish him every success in his new venture.

## "CASTROL" SUPPLIES IN TURKEY

THOSE who propose flying through Turkey will be pleased to know that supplies of Wakefield "Castrol" are available at the Yechilkeyu and Konia Aerodromes. Pilots requiring this oil should get into touch with J. W. Whittall & Co., Ltd., Boite Postale No. 62, Istanbul, Turkey, telephone 24404-5-6-7, who are the local agents.

In further connection with this well-known lubricating oil it is interesting to note that Mr. M. D. L. Scott, winner of the London to Cardiff Air Race last Saturday (October 15), used Castrol XXL in the Gipsy III engine of his de Havilland "Puss Moth."

## COMPER AGENCY IN FRANCE

M. JEAN LACOMBE, of 15, Rue de Courcelles, Paris, has been appointed the French agent for Comper Aircraft, Ltd., of Hooton Park, Cheshire. The price for the Pobjoy-engined "Swift" has been fixed at 48,000 Fr. and that for the Gipsy III-engined model 68,000 Fr.

## A CIRRUSS HISTORY

"LINKS," the house organ of Alexander Duckham & Co., Ltd., gives a very readable history of the growth of the Cirrus and Hermes engines, in the issue for October which has just come to hand. This deals, in a popular fashion, with the engines made at Croydon from the earliest Cirrus Mk. I down to the latest, the Hermes Mk. IV.



The Haythorpe Inspection Lamp. (FLIGHT Photo.)



# THE ROYAL AIR FORCE

London Gazette, October 11, 1932.

## General Duties Branch

The follg. Pilot Officers on probation are confirmed in rank (Oct. 9):—  
D. W. Baird, P. Bathurst, M. F. Calder, T. C. Chambers, J. H. A. Chapman, W. J. H. Ekins, K. F. Ferguson, R. W. Hay, W. A. W. Jameson, P. R. J. Leborgne, C. E. S. Lockett, A. Moncrieff, J. K. Quill, Q. W. A. Ross, J. C. Sisson, D. M. Somerville, F. W. L. Wild. Pilot Officer A. D. Grace is promoted to rank of Flying Officer (July 12); Flt. Lt. L. E. M. Gillman is placed on half-pay list, Scale A (Sept. 30); Flying Officer M. N. Oxford is transferred to Reserve, Class C (Oct. 8); Sqdn. Ldr. A. F. Brooke is placed on retired list on account of ill-health (Oct. 12).

## Stores Branch

Sqdn. Ldr. W. R. P. Allen is placed on retired list (Oct. 10).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

*Wing Commander* R. D. Oxland, O.B.E., to H.Q., Iraq Command, Hinaidi, 1.10.32, for Air Staff (Operations) duties *vice* G./Capt. A. G. R. Garrod, M.C., D.F.C.

*Squadron Leaders*: F. H. Laurence, M.C., to H.Q., Transjordan and Palestine, Jerusalem, 1.10.32, for Personnel Staff duties, *vice* Flt. Lt. F. H. Woolliams; E. J. Cuckney, D.S.C., to No. 70 (B.T.) Sqdn., Hinaidi, 1.10.32, for Flying duties *vice* Sqd. Ldr. R. Young; A. G. Bond, A.F.C., to H.Q., Iraq Command, Hinaidi, 4.10.32, for Personnel Staff duties; E. F. Turner, to H.Q., Air Defence of Gt. Britain, 10.10.32, for Signals duties *vice* Sqd. Ldr. C. S. Richardson.

*Flight Lieutenants*: J. R. D. Goadsby, to H.Q., Transjordan and Palestine, Jerusalem, 1.10.32. E. S. Moulton-Barrett, to No. 4 Flying Training School, Abu Sueir, 1.10.32. H. M. A. Day, A.M., to No. 4 Flying Training School, Abu Sueir, 1.10.32. R. H. W. Empson, to R.A.F. Depot, Middle East, Aboukir, 1.10.32. T. G. Pike, to R.A.F. Depot, Middle East, Aboukir, 1.10.32. V. D. Morshead, to R.A.F. Depot, Middle East, Aboukir, 1.10.32. H. V. Pendavis, D.S.O., to H.Q., Iraq Command, Hinaidi, 4.10.32. T. S. Horry, D.F.C., A.F.C., to No. 55 (B) Sqdn., Hinaidi, 4.10.32. M. S. Keogh, A.M., to Air Ministry (D. of E.), 1.10.32. C. Walter, to No. 84 (B) Sqdn., Shaibah, 4.10.32. P. V. Williams, to No. 70 (B.T.) Sqdn., Hinaidi, 4.10.32. P. R. Barwell, to Aircraft Depot, Iraq, Hinaidi, 4.10.32. R. Kellett, to Aircraft Depot, Iraq, Hinaidi, 4.10.32. F. M. V. May, to No. 8 (B) Sqdn., Khormaksar, 4.10.32. G. W. Tuttle, to Aircraft Depot, India, Karachi, 4.10.32. L. C. Barling, to No. 1 Armoured Car Co., Hinaidi, 4.10.32. E. J. George, to No. 8 (B) Sqdn., Khormaksar, 4.10.32. T. M. Abraham, to No. 2 (Indian Wing) Station, Risalpur, 4.10.32. W. G. Woolliams, to No. 70 (B.T.) Sqdn., Hinaidi, 4.10.32. R. K. Hamblin, to No. 31 (A.C.) Sqdn., Quetta, 4.10.32. W. J. Daddo-Langlois, to Air Ministry (Signals Branch), 10.10.32. H. A. Purvis, to No. 409 (F.F.) Flight, 7.10.32.

*Flying Officers*: G. A. G. Johnston, to No. 5 (A.C.) Sqdn., Quetta, India, 12.9.32. R. J. Clare-Hunt, to No. 4 Flying Training School, Abu Sueir, 1.10.32. J. Coverdale, to No. 4 Flying Training School, Abu Sueir, 1.10.32. L. W. V. Jennens, to No. 7 (B) Sqdn., Worthy Down, 4.10.32. H. Eeles, to H.Q., Middle East, Cairo, 1.10.32. R. L. Wilkinson, to H.Q., Transjordan and Palestine, Jerusalem, 1.10.32. G. T. Jarman, to No. 47 (B) Sqdn., Khartoum, 1.10.32. E. R. S. Johnston, to Anti-Aircraft Co-operation Flight, Biggin Hill, 4.10.32. G. Hinchley, to No. 208 (A.C.) Sqdn., Heliopolis, 1.10.32. A. E. J. Pratt, to R.A.F. Base, Gosport, 3.10.32. P. J. Connolly, to No. 40 (B) Sqdn., Upper Heyford, 8.10.32. J. H. Supple, to No. 84 (B) Sqdn., Shaibah, 4.10.32. N. B. Littlejohn, to No. 203 (F.B.) Sqdn., Basrah, 4.10.32. G. E. B. Nixon, to Aircraft Depot, Iraq, Hinaidi, 4.10.32. E. J. N. Heaven, to No. 8 (B) Sqdn., Khormaksar, 4.10.32. R. H. Harris, to No. 8 (B) Sqdn., Khormaksar, 4.10.32. N. W. Creasy, to Station Flight, Andover, 6.10.32.

*Pilot Officers*: D. L. Dustin, to No. 30 (B) Sqdn., Mosul, 1.10.32. C. W. M. Ling, to No. 208 (A.C.) Sqdn., Heliopolis, 1.10.32. R. E. Barnett, to R.A.F. Depot, Middle East, Aboukir, 1.10.32. C. J. Giles, to No. 47 (B) Sqdn., Khartoum, 1.10.32. H. P. Jenkins, to No. 47 (B) Sqdn., Khartoum, 1.10.32. R. J. Twamley, to No. 31 (A.C.) Sqdn., Quetta, 4.10.32. W. A. W.

## ROYAL AIR FORCE RESERVE.

### RESERVE OF AIR FORCE OFFICERS

#### General Duties Branch

Pilot Officer on probation J. D. Ronald is confirmed in rank (July 28); Flt. Lt. W. C. Venmore is transferred from Class A to Class C (Aug. 9); Flying Officer J. Reekie relinquishes his commn. on completion of service (Oct. 11). The commn. of Pilot Officer on probation J. H. Marsh is terminated on cessation of duty (Sept. 15).

## SPECIAL RESERVE

### General Duties Branch

A. C. Grant-Dalton is granted a commn. as Pilot Officer on probation (Sept. 17).

### Stores Branch

*Wing Commanders*: E. W. Havers, to H.Q., Middle East, Cairo, 1.10.32, for Stores Staff duties *vice* Group Capt. L. Auker, O.B.E. G. A. Hilliar, to H.Q., Iraq Command, Hinaidi, 1.10.32, for Stores Staff duties *vice* Wing Ccm. W. Millett, O.B.E.

*Squadron Leaders*: W. J. King, D.C.M., to Aircraft Depot, Iraq, Hinaidi, 1.10.32, for Stores duties *vice* Sqdn. Ldr. E. M. Cashmore

*Flight Lieutenants*: J. H. P. Clarke, to H.Q., Middle East, Cairo, 1.10.32. C. Hanson-Abbott, to R.A.F. Depot, Middle East, Aboukir, 1.10.32. M. F. Tomkins, to H.Q., Iraq Command, Hinaidi, 1.10.32. E. N. D. Worsley, to H.Q., Inland Area, Stanmore, 13.10.32.

*Flying Officers*: C. H. W. Boldero, to No. 208 (A.C.) Sqdn., Heliopolis, 23.9.32. J. T. Riggs, to No. 55 (B) Sqdn., Hinaidi, 1.10.32. W. J. B. Elliott, to Station H.Q., Hal Far, 30.9.32. M. H. Robinson, to R.A.F. Depot, Middle East, Aboukir, 1.10.32. R. G. Seymour, to No. 84 (B) Sqdn., Shaibah, 1.10.32. A. E. Hass, to Stores and Supply Depot, Aden, Steamer Point, 4.10.32. E. J. H. Starling, to No. 8 (B) Sqdn., Khormaksar, 4.10.32. W. Macey, to No. 2 (Indian Wing) Station, Risalpur, 4.10.32. G. R. Thwaite, to No. 1 (Indian Wing) Station, Kohat, 4.10.32.

*Pilot Officer* A. R. Morton, to Administrative Wing, Halton, 19.9.32.

### Accountant Branch

*Squadron Leader* J. Sullivan, to Station H.Q., Heliopolis, 1.10.32, for Accountant duties *vice* Flt. Lt. L. de L. Leder.

*Flight Lieutenant* A. J. Moore, to H.Q., Iraq Command, Hinaidi, 1.10.32. *Flying Officer* K. Fraser, to Station H.Q., Hinaidi, 4.10.32.

### Medical Branch

*Flight Lieutenant* P. H. Musgrave (Med. Quartermaster), to R.A.F. Hospital, Aden, 4.10.32.

### Dental Branch

*Flying Officers*: H. Keggin, to No. 1 School of Tech. Training (Apprentices), Halton, 4.10.32. V. H. Weeks, to No. 1 School of Tech. Training (Apprentices), Halton, 4.10.32. E. Sharp, to R.A.F. General Hospital, Hinaidi, 4.10.32.

### Chaplains Branch

Rev. J. H. P. Still, M.A., to H.Q., Transjordan and Palestine, Jerusalem, 1.10.32, for duty as Chaplain (Church of England) *vice* Rev. K. C. H. Warner, D.S.O., M.A. Rev. N. F. Porter, B.A., to No. 4 Flying Training School, Abu Sueir, 1.10.32, for duty as Chaplain (Church of England). Rev. R. D. Grange-Bennett, to H.Q., Iraq, Hinaidi, 4.10.32, for duty as Chaplain (Church of England) *vice* Rev. M. H. Edwards.

## NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

*Lieuts.* (Flying Officers, R.A.F.)—A. J. Tillard and G. B. Kingdon, to Victory for 409 Flight (Oct. 14); and B. H. M. KenCall, to Furious for 401 Flight (Nov. 2).

## Iraq Active Service Medal

THE following notice appeared in the *London Gazette* of September 23, 1932:—

The King has been graciously pleased to grant permission to the British personnel engaged in the operations against Sheikh Mahmud in Southern Kurdistan in 1930 and 1931, including the Royal Air Force personnel and British officers serving with the Iraq Army or Iraq Levies, to accept and wear without restriction the Iraq Active Service Medal conferred upon them by His Majesty the King of Iraq for their part in those operations.

The qualifying period for the medal will be October 29, 1930, to May 11, 1931, and the qualifying area:—Kirkuk-Surdash-Junction of Qala Cholan and Little Zab rivers on Iraqi-Persian frontier north of Mawit—thence along the frontier east and south to where it crosses the Khanaqin-Kermanshah road Khanaqin-Kingerban-Kirkuk. Individuals already in possession of the Iraq Active Service Medal will receive a clasp only. The medals and clasps will not be inscribed with the names of the recipients.

## THE ROYAL AIR FORCE MEMORIAL FUND

THE fourth meeting during the current year of the Council of the above Fund was held at Idlesleigh House, on October 5. Sir Charles McLeod was

in the chair, supported by Dame Helen Gwynne-Vaughan (Deputy Chairman), and other Members of the Council. After the usual financial resolutions had been carried, the Council were informed that the school supported by the Fund at Vanbrugh Castle, Blackheath, reopened for the current term on September 13 with a full complement of forty boys. During the period between July 6, the date of last meeting, and the present time, the Grants Committee held five meetings and considered 85 cases, 67 of which were war cases and 18 post-war cases, and in nearly every instance grants were made; and during the same period the Secretary dealt with 246 cases of appeals for help of all descriptions, 165 being wartime cases and 81 post-war cases, in all of which grants were made by him.

The Council approved of the usual Armistice time ceremonial at the R.A.F. War Memorial on the Victoria Embankment, S.W.1. A wreath provided by the Fund, and which will be obtained from the Poppy Day Factory of the British Legion, will be laid at the foot of the Memorial at 12 noon on Sunday, November 6 next, being the Sunday previous to Armistice Day. The wreath will be laid by Air Chief Marshal Sir J. M. Salmond, G.C.B., Chief of the Air Staff, and wreaths will at the same time be laid by representatives of the Dominions, by the "Women's Royal Air Force Old Comrades' Association," and by the "Comrades of the Royal Air Forces Association" and others. At the same time the Council approved of the provision of a wreath to be furnished to the Air Officer Commanding, Coastal Area, R.A.F., for laying at the foot of the Scottish National War Memorial (R.A.F. Bay), Edinburgh on the day fixed for the Armistice ceremony in Scotland.

The usual meeting of the Grants Committee of the Fund was held at Idlesleigh House, on September 29. Air Comm'dre B. C. H. Drew, C.M.G., was in the chair, and the other members of the Committee present were:—Mrs. L. M. K. Pratt Barlow, O.B.E., Mrs. F. Vesey Holt. The Committee considered in all 21 cases and made grants to the amount of £544 6s. 3d.

## CORRESPONDENCE

*The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.*

### THE NEW PATENTS ACT

[2811] There is a widespread impression that the official Patent Office examiners will now make a more extensive search than hitherto before granting a patent in this country. This is wrong; there is no widening of the search. The only statutory obligation on the examiner in this respect (Section 7) is still as of old, to search among British Patent Specifications. The new provision, however, is that the Comptroller may cite "any document" within his knowledge, but there is to be no new rigidly prescribed search. This is very different from the search of unrestricted scope undertaken in several other countries (e.g., Germany and United States), with the result that patents granted in these countries have a higher reputation than British patents and offer a better security to those financially interested.

In practice the examiners will bring to the notice of the Comptroller all kinds of anticipatory documents of which they may be aware in their own general knowledge, and it is estimated that even such a compromise will involve an ultimate annual sum of £60,000. This is to be partly met by an increase in patent fees expected to yield £38,500 annually.

EDWIN C. AXE.

London, W.C.2.

October 13, 1932.

### THE VERY LIGHT PLANE

[2812] I read your leading article in FLIGHT, October 13, and was very interested in the points you brought up. I have passed considerable time in German flying schools and have many friends among the young soaring and motor pilots who go to make up the excellent University and High School flying clubs in Germany.

I am convinced that these institutions alone are responsible for keeping the very light plane popular in Germany. Manufacturers, it is true, are placing light planes powered with engines of similar capacity to our Gipsy and Cirrus engines on the market, and are finding a sale for them. But it is felt that it is equally important to cater for the thousands of pilots of the German Youth Clubs, who all hope to, or even do, indulge in flying the very light plane. These young pilots will be the owner-pilots of to-morrow, and the idea of helping them to fly small-powered machines has ever been in the minds of responsible aviation people in Germany.

In England the gliding movement is showing a very healthy growth, slow but steady. There are many among its ranks, besides the many others, for whom the present methods of training are too slow, who would like to fly a reliable light plane with an engine of between 20 and 40 h.p.

By the production of such machines a new section of the population would surely be drawn into flying. As a result the flying community would benefit, and in the end the manufacturers as well.

Anyone who has seen students of 17 years and upwards flying very light machines belonging to the Student Flying Clubs, having learnt first to fly on gliders and sailplanes at very low initial cost, immediately realises the wisdom of the German attitude to light-powered machines.

Moreover, the German regulations for very light machines are indeed worth studying, and perhaps will give the main reason why these student clubs can give their members the chance of flying these light machines. There are, I believe, very few serious accidents in these machines.

Let us hope, therefore, that the new movement in England will receive due and sympathetic consideration from those in authority, as well as a sound backing by the far-thinking aircraft firms in England.

HEDLEY S. CRABTREE.

Cambridge.

October 14, 1932.

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### The Bagshot and District Model Aero Club

It is proposed to form a club for the construction and flying of model aircraft entitled "The Bagshot and District Model Aero Club." As Bagshot is in the centre of

a large area without such a club it is thought that a large number of members will be forthcoming. The club will apply to the S.M.A.E. for affiliation. All those interested are requested to communicate with F. P. Eads and A. Sawford, Joint Hon. Secs., "Brookleigh," High Street, Bagshot, Surrey.

### The "B.M.A.C." and R.101

THE Bournemouth Model Aircraft Society, which was founded in 1930 as a practical living memorial to the officers and men who lost their lives in the R.101 disaster, reached the second anniversary of its formation on October 11 last. In commemoration of this event the B.M.A.C. sent a laurel wreath to Cardington, to be placed on the R.101 Memorial in the Cardington churchyard, bearing the following inscription: "R.101: In memory of their supreme sacrifice, we 'carry on.' Bournemouth Model Aircraft Society, October 11, 1932."

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### IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1930 being given in FLIGHT, January 16, 1931.

|          | Imports. |        | Exports.  |           | Re-exports. |       |
|----------|----------|--------|-----------|-----------|-------------|-------|
|          | 1931.    | 1932.  | 1931.     | 1932.     | 1931.       | 1932. |
|          | £        | £      | £         | £         | £           | £     |
| Jan. ..  | 7,965    | 2,456  | 142,596   | 122,942   | 1,074       | 863   |
| Feb. ..  | 3,303    | 2,503  | 110,587   | 181,482   | 1,293       | 90    |
| Mar. ..  | 5,615    | 1,946  | 83,088    | 167,195   | 3,441       | 200   |
| April .. | 2,216    | 622    | 213,401   | 142,145   | 530         | 1,128 |
| May ..   | 1,964    | 1,747  | 275,382   | 138,356   | 108         | 5     |
| June ..  | 6,780    | 398    | 78,298    | 126,330   | 361         | 125   |
| July ..  | 1,790    | 1,070  | 177,006   | 142,702   | 131         | 120   |
| Aug. ..  | 3,556    | 511    | 153,834   | 111,073   | 2,316       | 3     |
| Sept. .. | 1,088    | 2,161  | 218,987   | 115,464   | 1,074       | —     |
|          | 34,277   | 13,414 | 1,453,179 | 1,247,689 | 10,418      | 2,534 |

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### PUBLICATIONS RECEIVED

*Aeronautical Research Committee Reports and Memoranda:* No. 1465. *Distortion of Thin Tubes under Flexure.* By A. J. Sutton Pippard. May, 1932. Price 6d. net. No. 1471. *A Flight Path Recorder Suitable for Performance Testing.* By R. P. Alston, D. A. Jones and E. T. Jones. April, 1932. Price 9d. net. No. 1473. *Graphical Solutions for Inviscid Flow.* By H. F. Winny. April, 1932. Price 1s. net. No. 1378. *Theory of Air-screw Body Interference.* By C. N. H. Lock. May, 1930. Price 1s. 3d. net. London: H.M. Stationery Office, W.C.2.  
*Histoire de l'Aéronautique.* By Charles Dollfus and Henri Bouché. L'Illustration, 13, rue Saint-Georges, Paris.

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### NEW COMPANIES, ETC.

CARB-JECTORS, LTD.—Capital, £1,000 in £1 shares. Acquiring the business of a welder and engineer now carried on by W. Hunter, at Cox's Lane, Oldhill, Staffs., together with the benefit of the registered trade mark "Carb-Jector" (No. 492749), electrical, wireless, aircraft and general engineers, etc. Permanent directors:—W. Hunter, Stamford House, Amblecote, near Brierley Hill; Mrs. F. Hunter, Stamford House, Amblecote, near Brierley Hill; Mrs. B. A. Shaw, Lyttil-Cot, Romsley, near Halesowen.

### Increases of Capital

PHILLIPS & POWIS AIRCRAFT (READING), LTD.—The nominal capital has been increased by the addition of £3,000 beyond the registered capital of £7,000. The additional capital is divided into 3,000 preference shares of £1 each. The new shares rank for dividend and in all other respects *pari passu* with the 1,500 existing non-redeemable preference shares.

AERO-ELECTRICAL EQUIPMENT CO., LTD.—The nominal capital has been increased by the addition of £5,000 in £1 ordinary shares beyond the registered capital of £5,000.

### Change of Name

SIMMONDS INTERCHANGEABLE WING CO., LTD., Stevenage House, Holborn Viaduct, E.C.1. Name changed to Simmonds Aerocessories, Ltd., on September 23, 1932.

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### AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

### APPLIED FOR IN 1931

Published, October 13, 1932

- 8,103 VICKERS-ARMSTRONGS, LTD., J. P. WATSON and S. PARKER. Apparatus for use in the fire control of anti-aircraft guns. (380,468).  
16,880. H. H. HARDIN and E. G. HILSABECK. Reversible propellers. (380,491).  
17,219. D. A. PAVELY. Model or toy aeroplanes or gliders. (380,478.)